

MATERIALS TOWARD A MONOGRAPH OF THE GENUS CITHAREXYLUM. VI

Harold N. Moldenke

CITHAREXYLUM QUERCIFOLIUM Hayek in Engl., Bot. Jahrb. 42: 169--170  
[as "Citharexylon"]. 1908; Prain, Ind. Kew. Suppl. 4: 49.  
1913.

Literature: Hayek in Engl., Bot. Jahrb. 42: 169--170. 1908;  
Prain, Ind. Kew. Suppl. 4: 49. 1913; Moldenke, Geogr. Distrib.  
Avicenn. 23. 1939; Moldenke, Prelim. Alph. List Invalid Names 15.  
1940; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 34 & 88.  
1942; Moldenke, Alph. List Invalid Names 13. 1942; Moldenke,  
Alph. List Cit. 2: 328 & 331 (1948), 3: 690 (1949), and 4: 1112.  
1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 72 &  
179. 1949; Moldenke, Résumé 82, 254, 416, & 447. 1959.

Clambering or twining (?) shrub; branchlets and twigs rather  
slender, brown, very minutely and obscurely puberulent on the  
younger parts, soon becoming glabrous or subglabrate, usually  
more or less 5-angled, the larger branchlets often prominently 5-  
ribbed; nodes much ampliate, obscurely annulate; principal inter-  
nodes 2.7--7.5 cm. long; leaf-scars borne on extremely large and  
prominent, divergent, corky sterigmata to 5 mm. long; leaves ter-  
nate; petioles rather slender, 4--7 mm. long, practically glab-  
rate, flat above, shiny; leaf-blades firmly chartaceous or sub-  
coriaceous, dark-green on both surfaces, becoming subbrunneous in  
drying, subnitid or dull, often slightly lighter beneath, ellip-  
tic, 2.2--8 cm. long, 1.5--3.5 cm. wide, acute or obtuse in out-  
line at the apex, rather remotely and irregularly spinose-dentate  
along the margins to below the middle or only at the apex, cuneate  
at the base, glabrous or subglabrate on both surfaces; midrib  
slender, prominent beneath, usually prominulent above, often  
slightly tortuous or undulate in drying; secondaries very slender,  
8--12 pairs, close together, ascending, often not very much arcu-  
ate, slightly prominulent on both surfaces; vein and veinlet re-  
ticulation abundant, slightly prominulous, especially above; rac-  
emes terminal, simple, 2.5--10.5 cm. long, 1--1.5 cm. wide dur-  
ing anthesis, rather densely many-flowered, erect or subnutant;  
peduncles and rachis slender, minutely puberulent, the former 0.5  
--2 cm. long and often subglabrous; pedicels rather thick, about  
1 mm. long, puberulent or glabrate; bracts absent; bractlets few,  
linear, about 4 mm. long, ternate; prophylla setaceous, rather  
stout, about 1 mm. long; flowers subsecund, fragrant; calyx cam-  
panulate, about 4 mm. long, its rim very shortly 5-dentate; corol-  
la white, about 8 mm. long; fruiting-calyx and fruit not known.

The type of this distinctive species was collected by August  
Weberbauer (no. 4248) on the western edge of the Marañon valley  
between Balsas and Celendin, at an altitude of 3100 to 3200  
meters, Cajamarca, Peru, on June 22, 1904, and is deposited in the  
herbarium of the Botanisches Museum at Berlin. The Macbride photo-  
graph 17598, in at least the Krukoff Herbarium, is inscribed "Par-  
aguay" in error. In all, 6 herbarium specimens, including the

type, and 7 mounted photographs have been examined. It is known thus far only from the type collection.

Citations: PERU: Cajamarca: Weberbauer 4248 [Macbride photos 17598] (B--type, B--isotype, Cb--isotype, F--663027--photo of type, F--686495--isotype, K--photo of type, Kr--photo of type, N--isotype, N--photo of type, N--photo of type, S--photo of type, Z--photo of type).

CITHAREXYLUM QUITENSE Spreng. in L., Syst. Veg., ed. 16, 2: 763 [as "Citharexylon"]. 1825; Schau. in A. DC., Prodr. 11: 611. 1947.

Synonymy: Citharexylum molle H.B.K., Nov. Gen. & Sp. Pl. 2: 257--258. 1818 [not C. molle Salisb., 1796, nor Jacq., 1804]. Citharexylon molle Humb. & Bonpl. ex Steud., Nom. Bot., ed. 1, 202. 1821. Citharexylon molle H.B.K. apud Walp., Repert, 4: 77, in syn. 1845. Citharexylum molle Hook. ex Moldenke, Prelim. Alph. List Invalid Names 17, in syn. 1940.

Literature: H.B.K., Nov. Gen. & Sp. Pl. 2: 257--258. 1818; Steud., Nom. Bot., ed. 1, 202. 1821; Spreng. in L., Syst. Veg., ed. 16, 2: 763. 1825; Steud., Nom. Bot., ed. 2, 1: 375. 1840; Walp., Repert. 4: 77. 1845; Schau. in A. DC., Prodr. 11: 611. 1847; Jacks., Ind. Kew. 1: 550. 1893; Moldenke, Alph. List Common Names 22. 1939; Moldenke, Geogr. Distrib. Avicenn. 22. 1939; Moldenke, Prelim. Alph. List Invalid Names 17. 1940; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 33 & 88. 1942; Moldenke, Alph. List Invalid Names 14. 1942; Moldenke, Phytologia 2: 97. 1944; Moldenke, Alph. List Cit. 1: 50 & 266 (1946), 2: 344, 351, 447, & 573 (1948), 3: 696, 737, & 956 (1949), and 4: 1207. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 69 & 179. 1949; Moldenke, Résumé 79, 254, 257, & 447. 1959.

Shrub or slender much-branched tree, to 6 m. tall, generally not over 5 m. tall; branchlets and twigs medium, sharply tetragonal, hollow, very light-gray or stramineous, minutely and obscurely short-pubescent or subglabrate, often more or less margined; nodes annulate; principal internodes 0.7--3 cm. long; leaves decussate-opposite, borne on short, stout, closely appressed or ascending, corky sterigmata; petioles slender, 6--10 mm. long, minutely puberulent, flattened above, nigrescent in drying, decidedly margined; leaf-blades membranous, dark-green above, much lighter beneath, dull, very broadly oblong-elliptic or suborbicular, 5--11.5 cm. long, 3--7.5 cm. wide, acute or subacuminate at the apex, entire or rarely with 2 or 3 broad and tooth-like angulations near the apex, cuneate at the base and prolonged into the petiole, with a pair of elongate black glands on the prolongation, glabrous above (except along the more or less puberulent midrib) and roughened by the more or less prominent venation, very densely short-tomentose with simple incanous hairs beneath; midrib slender, slightly impressed above, prominent and nigrescent in drying beneath, densely puberulent, especially beneath; secondaries slender, 4--8 pairs, arcuate-ascending, prominent on both surfaces,

but only very slightly so above, often forking near the summit and not plainly anastomosing, often not very much arcuate; vein and veinlet reticulation very fine, obscured by the pubescence beneath, very slightly prominent above; inflorescence showy; racemes terminal, nutant, 6.5--13.5 cm. long, 1.5--2 cm. wide in fruit, rather many-flowered, simple; peduncles slender, 2--3 cm. long, stramineous, densely puberulent; rachis slender, densely puberulent; pedicels (in fruit) short and stout, about 1 mm. long, densely puberulent; bracts and bractlets absent; prophylla minute, setaceous; flowers about the size of those of Myosotis scorpioides L., the buds rather dark-yellow; calyx membranous, urceolate-campanulate, lax, sub-5-nerved, puberulent, its rim obsolete and unequally 5-dentate; corolla hypocrateriform, pale-yellow or yellowish-white, its tube cylindrical, twice as long as the calyx, ampliate above, pubescent toward the apex within, villous in the throat, its limb 5-parted, very wide-spreading, the lobes subrotund, obtuse at the apex, revolute on both margins, shorter than the tube, subequal, villous-barbate toward the base; stamens inserted at the middle of the corolla-tube, subdidynamous, included; filaments filiform, somewhat pilose; anthers dorsifixed, oblong, obtuse, erect, bilocular, the thecae dehiscing longitudinally; style filiform, erect, half as long as the corolla-tube, glabrous; stigma subcapitate; ovary obovate, glabrous; fruiting-calyx indurated, shallowly cupuliform, about 3 mm. long and 9 mm. wide, minutely puberulent or subglabrate, its rim truncate and subentire or slightly scarious-undulate; fruit drupaceous, oblong, about 9 mm. long and 7 mm. wide (immature?), not very fleshy, orange-red or scarlet when fresh, black and 2-sulcate in drying, short-apiculate when immature, mucilaginous.

The type of this distinctive species was collected by Aimé Jacques Alexandre Bonpland (no. 3817) at Guayaquil, Guayas, Ecuador, and is deposited in the Bonpland Herbarium at the Muséum National d'Histoire Naturelle at Paris. Sprengel's name is based on the same type. The species has been collected in anthesis in January and February, and in fruit from January to March. It is not certain that the fruit examined was mature because of its still apiculate apex. Judging from the width of the fruiting-calyxes, it is very probable that the mature fruit is much larger and perhaps more fleshy than is indicated in the above description. Spruce describes it as "miniati subbaccati", and collected the plant in shrubbery along the Río Daule near Guayaquil. It has also been found in woods, thickets, and savannas and along roadsides, and Haught says it is "common" at altitudes of less than 100 meters. Vernacular names are "muyuyu" and "muyuyu del monte". It has occasionally been confused with the genus Duranta by herbarium workers. In all, 22 herbarium specimens, including the types of all the names involved, and 6 mounted photographs have been examined.

Citations: ECUADOR: El Oro: Asplund 15682 (S). Guayas: Asplund 5170 (N, S), 15233 (S), 15323 (S); Bonpland 3817 [Mac-

bride photos 39481] (Kr—photo of type, N—photo of type, N—photo of type, P—type, Z—photo of type); Haught 3034 (N); Mille 842 (F—920167, G), 866 (F—768055); Spruce 6320 (B, Bm, Cb, Ed, K, L, N, N—photo, P, V—106468, V—166960, X, Z—photo). LOCALITY OF COLLECTION UNDETERMINED: Collector undesignated 23 (Q).

CITHAREXYLUM RACEMOSUM Sessé & Moc., Pl. Nouv. Hisp., ed. 1, 103 [as "Cytharexylum"]. 1889; ed. 2, 96—97. 1893.

Literature: Sessé & Moc., Pl. Nouv. Hisp., ed. 1, [La Natural-eza II, 1: app.] 103. 1889; Sessé & Moc., Pl. Nouv. Hisp., ed. 2, 96—97. 1893; Sessé & Moc., Fl. Mex., ed. 1, 152 (1894) and ed. 2, 166. 1896; Hill, Ind. Kew. Suppl. 7: 50. 1929; Moldenke, Geogr. Distrib. Avicem. 13. 1939; Moldenke, Prelim. Alph. List Invalid Names 24. 1940; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 16 & 88. 1942; Moldenke, Alph. List Invalid Names 23. 1942; Moldenke, Alph. List Cit. 2: 339 (1948) and 3: 926. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 29 & 179. 1949; Moldenke, Résumé 35, 277, & 447. 1959.

Shrub, to 1.8 m. tall; branches opposite, rather thick, terete; branchlets slender, acutely tetragonal, red-brown when fresh, nigrescent in drying, geniculate, glabrous; twigs very slender, light-gray or white, acutely tetragonal, lenticellate, corky, glabrous; nodes annulate; principal internodes 5—22 mm. long; leaf-scars borne on corky sterigmata about 1 mm. long; leaves decussate-opposite; petioles 1—3 mm. long and winged, or perhaps better considered obsolete; leaf-blades chartaceous, rather dark-green above, lighter beneath, elliptic or narrow-elliptic, 1.5—3 cm. long, 3—10 mm. wide, acute at the apex, entire, long-acuminate and attenuate at the base, very minutely pulverulent-puberulent or glabrous on both surfaces, the margins usually slightly subrevolute and pilosulous; midrib very slender, subprominent on both surfaces (rather more acutely so above) except toward the apex beneath; secondaries very slender, about 3 per side, arcuate-ascending, subprominent above, usually less so beneath; vein and veinlet reticulation obscure; inflorescence axillary, simple, few- or 1-flowered, shorter than the subtending leaves; peduncles obsolete; pedicels (in fruit) slender, 4—5 mm. long, gray, slightly downwardly curvate, minutely puberulous; calyx-rim dentate; corolla white, the lobes red-striped above; fruiting-calyx patelliform, about 5 mm. wide, glabrate or minutely puberulous; fruit drupaceous, subglobose, about 7 mm. long and wide.

The type of this remarkable species was collected by Martín Sessé y Lacasta, José Mariano Mociffo, Juan Diego del Castillo, and José Maldonado (no. 2365) at Puranyuco, near Salamantica, Guanajuato, Mexico, and is deposited in the herbarium of the Jardín Botánico at Madrid. One of the two labels on the type specimen is inscribed "Citharexylum racemosum. N." and the other reads "No. 89. Citharexylum cinereum. N". The latter is probably on the sheet in error; Sessé & Mociffo's C. cinereum is conspecific with C. fruticosum L. as has been verified by examination of their type material.



C. racemosum has been collected in anthesis in July and is known thus far only from the original collection. Two herbarium specimens, including the type, and 2 mounted photographs have been examined.

Citations: MEXICO: Guanajuato: Sessé, Mociffo, Castillo, & Maldonado 2365 (F--849473--isotype, N--photo of type, Q--type, Z--photo of type).

CITHAREXYLUM RECURVATUM Greenm., Field Columb. Mus. Publ. Bot. 2: 189--190. 1907.

Synonymy: Citharexylum villosum Donn. Sm. apud Greenm., Field Columb. Mus. Publ. Bot. 2: 190, in syn. 1907 [not C. villosum Jacq., 1781, nor Griseb., 1909, nor Chapm., 1913].

Literature: Greenm., Field Columb. Mus. Publ. Bot. 2: 189--190. 1907; Prain, Ind. Kew. Suppl. 4: 49. 1913; Standl., Field Mus. Publ. Bot. 18: 1001. 1938; Moldenke, Geogr. Distrib. Avicenn. 17 & 36. 1939; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 22, 23, 71, & 88. 1942; Moldenke, Alph. List Invalid Names 58. 1942; Moldenke, Alph. List Cit. 1: 123, 142, & 167. 1946; Moldenke, Alph. List Invalid Names Suppl. 1: 5. 1947; Moldenke, Alph. List Cit. 2: 345 & 347 (1948), 3: 948 (1949), and 4: 1023, 1057, & 1141. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 39, 40, 158, & 179. 1949; Moldenke, Résumé 46, 48, 215, 259, & 447. 1959.

Shrub or tree, to 20 m. tall; branchlets and twigs medium-slender, brown, lenticellate, glabrous, acutely or obtusely tetragonal, the branchlets sometimes terete; nodes obscurely or not at all annulate; principal internodes 2--4.5 cm. long; leaf-scars borne on stout ascending sterigmata to 4 mm. long; leaves decussate-opposite or approximate; petioles rather stoutish, 1--1.5 cm. long, deeply sulcate above, glabrous, more or less margined to the base; leaf-blades very firmly chartaceous, rather dark grayish-green above, deeper green beneath, very shiny (especially above), oblong-lanceolate to subovate, 3.2--11.5 cm. long, 1.4--3.7 cm. wide, acute to obtuse at the apex, entire, acute or abruptly acute at the base and prolonged into the petiole, often very slightly subrevolute (especially at the base) in drying, bearing a pair of small black glandular disks on the prolongation, glabrous on both surfaces; midrib rather slender, plane above, prominent beneath; secondaries slender, 6--8 pairs, irregular, arcuate-ascending, prominent beneath and very slightly so above; vein and veinlet reticulation very slightly prominent above, more or less obscure beneath; racemes terminal, 13--16 cm. long, 1--1.8 cm. wide, simple or paniculate, erect or nutant, rather densely many-flowered; peduncles and rachis rather slender, brown, ribbed, glabrous, the former 1--3.3 cm. long; pedicels slender, 1.5--3 mm. long, glabrous; bracts and bractlets absent; prophylla setaceous, about 1 mm. long; flowers small; calyx tubular-campanulate, about 3 mm. long, glabrous, its rim shallowly sinuate and minutely 5-denticulate; corolla-limb 5-lobed, the lobes subequal; perfect stamens 4, in-

cluded; style glabrous; ovary glabrous; fruiting-calyx light, cupuliform, about 2.5 mm. long and 5 mm. wide, glabrous, shiny, ribbed, its rim subtruncate or eventually more or less scarious; fruit drupaceous, at first yellow or orange, later bluish-black, oblong, 5--7 mm. long, about 5 mm. wide, fleshy, glabrous, shiny, nigrescent and very much wrinkled in drying; pyrenes elliptic-oblong, 4--5 mm. long, 3--3.5 mm. wide, about 2 mm. thick, smooth.

The type of this species was collected by Juan J. Cooper (no. 474; changed to no. 5889 in Smith's re-numbering) in cultivation on the campo along the Río Reventado, Cartago, Costa Rica, at an altitude of 6000 feet, in April, 1888, and is deposited in the Gray Herbarium of Harvard University. Cooper's original notes state that the plant was cultivated, but this fact was not copied by Smith on his printed labels, so most subsequent authors have regarded the species as native to Cartago, which, of course, it may well be, although it has not been subsequently found there. It has been confused in herbaria with *C. caudatum* L., *C. donnell-smithii* Greenm., and *C. quadrangulare* Jacq. It has been found at altitudes of 1500 to 2000 meters, in fruit in June and July. A vernacular name for it is "palo paloma". Allen reports that it is "very common in potreros". In all, 12 herbarium specimens, including the types of both the names involved, and 5 mounted photographs have been examined.

Citations: PANAMA: Chiriquí: P. H. Allen 4730 (N); Davidson 899 (F-934661); Woodson, Allen, & Seibert 870 (F-969448, N). Province undetermined: Duchassaing s.n. (G). CULTIVATED: Costa Rica: J. J. Cooper 474 [J. D. Smith 5889] (B--isotype, B--photo of type, G--type, K--isotype, K--photo of type, N--isotype, N--photo of type, S--photo of type, W--260596--isotype, W--1323222--isotype, W--1323223--isotype, Z--photo of type).

CITHAREXYLUM REITZII Moldenke, Phytologia 3: 59. 1949.

Literature: Moldenke, Phytologia 3: 59 & 74. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 76 & 179. 1949; Salisb., Ind. Kew. Suppl. 11: 55. 1953; Moldenke, Résumé 88 & 447. 1959.

Tree, to 5 m. tall; branchlets and twigs rather slender, grayish or brownish, obtusely tetragonal, very obscurely and irregularly pilosulous or strigillose, glabrescent in age, rather abundantly lenticellate with more or less longitudinally elongate lenticles; nodes not annulate; principal internodes 3--6 mm. long, or much more abbreviated on lateral twigs; leaves decussate-opposite, brunnescent or nigrescent in drying; petioles about 1 cm. long, very minutely and obscurely strigillose, narrowly winged and merging into the blade; leaf-blades elliptic-obovate, chartaceous, 3--9 cm. long, 1.2--3 cm. wide, varying from rounded (on small leaves) to acute or shortly subacuminate at the apex, long-acuminate into the petiole at the base, rather regularly subappressed-serrate on the margins from the widest point to the apex, glabrous on both surfaces or very obscurely

strigillose on the lower midrib and minutely barbellate in the axils beneath; midrib flat above, prominulous beneath; secondaries slender, 2--4 per side, arcuate-ascending, flat above, subprominulous beneath; vein and veinlet reticulation obscure; inflorescence axillary, racemiform, about 8 cm. long, many-flowered; peduncle and rachis angular, nigrescent in drying, minutely and obscurely strigillose; pedicels very slender, about 1 mm. long, minutely puberulent; calyx about 2.5 mm. long, glabrous except for the ciliolate subtruncate rim; corolla white, apparently about 5 mm. long, the lobes white-woolly; fruiting-calyx and fruit not seen.

The type of this species was collected by my good friend and colleague, Raulino Reitz (no. C.175) -- in whose honor it is named -- "na capoeira da vargem", Rodeio da Areia, Arar, Santa Catarina, Brazil, on November 2, 1943, and is deposited in the Britton Herbarium at the New York Botanical Garden. The collector describes the fruit as "baga de 1--1,50 cm." He also collected the species in small woods at Sombrio, near Araranguá, twenty days later. In all, 3 herbarium specimens, including the type, and 4 mounted photographs have been examined.

Citations: BRAZIL: Santa Catarina: Reitz 1002 [Herb. Anchieta 30452] (Rb), C.175 [Herb. Jard. Bot. Rio de Jan. 51362] (F--photo of type, N--type, N--isotype, N--photo of type, Sg--photo of type, Z--photo of type).

CITHAREXYLUM RETICULATUM H.B.K., Nov. Gen. & Sp. Pl. 2: 257.

1817 [not C. reticulatum Donn. Sm., 1907, nor Cham., 1909].

Synonymy: Citharexylon reticulatum Humb. & Bonpl. apud Steud., Nom. Bot., ed. 1, 202. 1821. Citharexylon reticulatum Bonpl. apud Spreng. in L., Syst. Veg., ed. 16, 2: 764. 1825. Ehretia articulata Willd. ex Cham., Linnaea 5: 97. 1830; Walp., Repert. 4: 75, in syn. 1845. Citharexylon reticulatum H.B.K. apud Walp., Repert. 4: 75. 1845. Citharexylum reticulatum Kunth apud Schau. in A. DC., Prodr. 11: 613. 1847. Ehretia articulata Walp. ex Jacks., Ind. Kew. 1: 823, in syn. 1893. Citharexylon reticulatum Kunth ex Engelhardt, Senckenberg. Naturf. Gesell. Abh. 9: 31. 1895.

Literature: H.B.K., Nov. Gen. & Sp. Pl. 2: 287. 1817; Roem. & Schult., Syst. Veg. 4: 805. 1819; Steud., Nom. Bot., ed. 1, 202. 1821; Spreng. in L., Syst. Veg., ed. 16, 2: 764. 1825; Cham., Linnaea 5: 97. 1830; Steud., Nom. Bot., ed. 2, 1: 375. 1840; Walp., Repert. 4: 75. 1845; Jacks., Ind. Kew. 1: 550 & 823. 1893; Engelhardt, Senckenberg. Naturf. Gesell. Abh. 9: 31. 1895; Moldenke, Geogr. Distrib. Avicenn. 23. 1939; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 34 & 88. 1942; Moldenke, Alph. List Invalid Names 24. 1942; Moldenke, Alph. List Cit. 1: 50 (1946), 2: 351 & 573 (1948), and 3: 696. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 72 & 179. 1949; Moldenke, Résumé 79, 82, 254, 258, 284, 415, 416, & 447. 1959.

Tree; branches and branchlets unarmed, whitish, rugose, glab-

rous, the younger parts tetragonal; leaves decussate-opposite, petiolate; leaf-blades coriaceous, varying from oblong, lanceolate-oblong, or elliptic to oval, ovate, or obovate, 5 or more cm. long, 1.6--2.4 cm. wide, acute or obtuse to retuse at the apex, entire (or rarely spinose-dentate) at the margins, narrowed into the petiole at the base, shiny above, glabrous on both surfaces when mature, pubescent on the midrib beneath when immature; midrib, secondaries, and veinlet reticulation very prominent beneath; racemes spike-like, erect, terminal, solitary, about 4 cm. long; flowers pedicellate; bractlets linear; pedicels puberulent; rachis puberulent; calyx campanulate, glabrous, 5-nerved, its rim 5-dentate; corolla white, longer than the calyx, its limb spreading, 5-parted, the lobes subrotund, equal; stamens 5, inserted at the apex of the corolla-tube; filaments very short; style short; stigma capitate; fruit drupaceous, globose, black, about the size of a pea (Pisum sativum L.), partly invested by the fruiting-calyx.

The type of this species was collected by Aimé Jacques Alexandre Bonpland (no. 3419) on the banks of Río Catamayo, at an altitude of 2150 meters, near the town of Gonzanama, in the temperate Andes of Loja, Ecuador, and is deposited in the Bonpland herbarium at the Muséum National d'Histoire Naturelle at Paris. All older authors state that the type locality is in Peru, which was true then, but this area is now in Loja, Ecuador. The species has been collected on riverbanks and in low hills, at altitudes of 2150 to 3000 meters, blooming in November. It has been confused in herbaria with the genus Duranta. In passing, one may note that it is very possible that the taxon now passing as C. laurifolium Hayek is conspecific with C. reticulatum.

Schauer included C. affine Mart. & Gal. and C. scariosum Moc. & Sessé in the synonymy of C. reticulatum, but examination of the types reveals that the former is actually C. hexangulare Greenm. while the latter is C. ellipticum Sessé & Moc. He notes that the original descriptions of both of these plants agree completely with the characters of C. reticulatum except for the one phrase "venis nervoque subtus valde prominentibus" which they do not give. This shows again the danger inherent in the reduction of names without actual examination of the types on which they are based. If Schauer had seen the types of these two binomials he would never have considered them conspecific with C. reticulatum.

Walpers, Schauer, and Chamisso all state that C. reticulatum is found in Peru and Mexico, but the Mexican specimens to which they refer are all C. ellipticum or C. hexangulare.

In all, 3 herbarium specimens and 5 mounted photographs have been examined, including the type. Unfortunately, however, the type of Ehretia articulata has not yet been seen by me.

Citations: COLOMBIA: Department undetermined: Linden 133 (Br). ECUADOR: Loja: Bonpland 3419 [Macbride photos 39479] (F--1038404--photo of type, Kr--photo of type, N--photo of type, N--photo of



type, P--type, Z--photo of type). PERU: Lima: Ferreyra 10426 (Z).

CITHAREXYLUM RETIFORME Engelhardt, Senckenberg. Naturf. Gesell.

Abh. 19: 31, pl. 5, fig. 10 [as "Citharexylon"]. 1895; Moldenke, Geogr. Distrib. Avicenn. 41. 1939.

Literature: Engelhardt, Senckenberg. Naturf. Gesell. Abh. 19: 31, pl. 5, fig. 10. 1895; Moldenke, Geogr. Distrib. Avicenn. 41. 1939; Moldenke, Prelim. Alph. List Invalid Names 15. 1940; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 75 & 88. 1942; Moldenke, Alph. List Invalid Names 13. 1942; H. N. & A. L. Moldenke, Plant Life 2: 42. 1948; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 166 & 179. 1949; Moldenke, Résumé 226, 254, & 447. 1959.

Illustrations: Engelhardt, Senckenberg. Naturf. Gesell. Abh. 19: pl. 5, fig. 10. 1895.

Leaf-blades leathery, elliptic, subacuminate at the apex, entire; midrib strong; secondaries arising from the midrib at acute angles and extending in arcuate fashion; venation network composed of larger delicate mesh ["dass Netzwerk ist von grösseren zarten Maschen gebildet"].

Engelhardt says further that "Das Blattfragment zeigt die auf der einen Hälfte umgebogene Unterseite, die bei der Zeichnung auf die Ebene projiziert wurde. Die Nervillen erweisen sich weder als eingesenkt, noch als herfortretend." The species is based on a specimen collected in the fossil condition by Dr. Moritz Alphons Stübel in the mines of Santa Ana on the Río Guama, near Garrapata, probably in Antioquia, Colombia, and is of Miocene age. Engelhardt says that the fossil specimen much resembles the larger leaves seen by him on dried herbarium specimens labeled "Citharexylon quadrangulare Jacq." and "Citharexylon cinereum L." in the Dresden herbarium. In both cases he is probably referring to C. spinosum L., but the species seems rather to be most closely related to the modern C. reticulatum H.B.K. of the same general area.

CITHAREXYLUM RIGIDUM (Briq.) Moldenke, Phytologia 1: 17. 1933.

Synonymy: Citharexylum myrianthum var. rigidum Briq., Ann. Conserv. & Jard. Bot. Genève. 7-8: 317--318. 1904. Citharexylum rigidum Briq., Ann. Conserv. & Jard. Bot. Genève. 7-8: 317, in syn. 1904; J. A. Clark, Card Ind. issue 30. n.d.

Literature: Briq., Ann. Conserv. & Jard. Bot. Genève. 7-8: 317--318. 1904; Chid. & Hassler, Bull. Herb. Boiss., ser. 2, 4: 1166 [Plant. Hassler. 502]. 1904; Moldenke, Phytologia 1: 17. 1933; Hill, Ind. Kew. Suppl. 9: 67. 1938; Moldenke, Geogr. Distrib. Avicenn. 26 & 28. 1939; Moldenke, Prelim. Alph. List Invalid Names 17. 1940; Moldenke, Lilloa 6: 319 (1941) and 8: 415. 1942; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 36, 40, & 88. 1942; Moldenke, Alph. List Invalid Names 14. 1942; Moldenke, Alph. List Cit. 1: 27 (1946), 2: 347 (1948), and 3: 848. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 76, 98, & 179. 1949; Moldenke, Résumé 88, 116, 257, 258, & 447.

1959; J. A. Clark, Card Index issue 30. n.d.

Shrub or medium-sized tree, to 8 m. tall; branchlets and twigs medium or slender, stramineous or light-gray, very obtusely tetragonal or almost subterete, woody, glabrous, the twigs usually yellowish-green; nodes not annulate; principal internodes 1.5—3.7 cm. long; leaf-scars borne on rather stout ascending and corky sterigmata 1—4 mm. long; leaves decussate-opposite or ternate, very often subopposite or approximate; petioles slender, 0.5—2 cm. long, glabrous, flattened or canaliculate above, slightly margined; leaf-blades firmly thick-chartaceous, rigid, rather uniformly gray-green on both surfaces, lanceolate-oblong or oblong to oblanceolate, 5.8—11.5 cm. long, 1.5—3 cm. wide, acute or subacute to short-acuminate (rarely obtuse or retuse) at the apex, entire, gradually and regularly convex along the margins, cuneate or acuminate at the base, glabrate on both surfaces (or very lightly and obscurely pilosulous along the midrib beneath), shiny above, more or less prolonged into the petiole and often bearing 1 or 2 large black crateriform glands on the prolongation; midrib prominent beneath, prominent above; secondaries very slender, 6—8 pairs, prominent beneath, ascending at an angle of about  $45^{\circ}$ , almost straight; vein and veinlet reticulation numerous, slightly prominent beneath, hardly prominent but very plainly discernible above; racemes axillary and terminal, 10—25 cm. long, to 1.5 cm. wide, simple, rather loosely many-flowered, erect or nutant; peduncle and rachis slender or stoutish, brownish or stramineous, sparsely puberulent or becoming glabrous, the former 2—4.5 cm. long; fruiting-pedicels stout, nutant, 2—3 mm. long, sparsely puberulent or finally glabrate; bracts and bractlets apparently absent; prophylla linear-lanceolate or setaceous, 1—2 mm. long; flowers not known; fruiting-calyx light-colored, incrassate, rigidly subcoriaceous, cupuliform or cyathiform, 4—6 mm. long, 6—8 mm. wide, sparsely puberulent, becoming glabrate, impressed-punctate, not venose, its rim deeply 4-lobed or irregularly 5-lobed, the lobes ovate-rotund or triangular, 1—2 mm. long, 2—4 mm. wide, acute at the apex, scarious-margined; fruit oblong, 8—9 mm. long, 5—7 mm. wide, not fleshy, very light-brown and 2-sulcate in drying, shiny, red subcarneous when fresh.

The type of this species was collected by Benedict Balansa (no. 2090) in damp places near Assomption, Paraguay, in March, 1875, and is deposited in the Delessert Herbarium at Geneva. It has been confused with C. myrianthum Cham. by early herbarium workers. Briquet, in the reference listed above, says: "La distinction établie par Schauer (in Prodr. XI, 609) entre les espèces à grappes pendantes et à grappes érigées est purement artificielle. Ce Citharexylum possède des grappes incurvées-nutantes comme le C. myrianthum, dont il est très voisin. Il s'en distingue par ses feuilles plus rigides, très lisses et luisantes en dessus, glabres ou presque glabres en dessous, plus petites, non acuminées, mais mutiques au sommet. Nous avons longtemps hésité à considérer le C. rigidum comme une espèce distincte du C. myrian-

thum, dont les formes n'ont guère été distinguées jusqu'à présent. Nous préférons cependant présenter provisoirement ces deux plantes comme des variétés, parce qu'une revue de l'ensemble des matériaux existant mettrait sans aucun doute en évidence l'existence de formes intermédiaires."

Balansa says that the racemes are pendent and the fruit fleshy. Compared with other species, such as C. caudatum L., for instance, which are very fleshy, the fruits on this plant seem to be almost fleshless. When they are dry only a very thin layer covers the bony endocarp. Its very light-gray branches and branchlets, its stramineous or even yellowish twigs, and the rather variable leaf arrangement are noteworthy. Its very decidedly gray-green leaf coloration on herbarium material distinguishes it at once from C. myrianthum.

Reineck reports it as rare in thickets near São Pedro and in river thickets of the Rio Guahyba towards Novegantes in Rio Grande do Sul. He misidentified it as "Citharexylon quadrangulare L." [= Citharexylum spinosum L.]. Osten, in this connection, has placed a very interesting note on the February 14th specimen in the Montevideo herbarium: "Reineck ist ein Schwindler. Er hat mir eben zweite Collection Pflanzen angeblich von Brasil, Rio Grande, verkauft, die sicher z. Theil nicht von dort stammen, also falsch Etiketten haben...Osten."

In all, 18 herbarium specimens, including the type of all the names involved, and 7 mounted photographs have been examined.

Citations: BRAZIL: Rio Grande do Sul: Reineck s.n. [Porto Alegre, Feb. 14, 1898; Herb. Osten 5045] (N, Ug), s.n. [Porto Alegre, 4/XII/98] (N--photo, Ol, Z--photo). PARAGUAY: Balansa 2090 (B--isotype, B--isotype, B--photo of isotype, Br--isotype, Cb--type, F--976845--isotype, K--isotype, K--photo of isotype, L--isotype, Lu--isotype, N--isotype, N--isotype, N--photo of isotype, P--isotype, P--isotype, S--isotype, S--photo of isotype, X--isotype, X--isotype, Z--photo of isotype).

CITHAREXYLUM RIMBACHII Moldenke, Phytologia 1: 443--444. 1940.

Literature: Moldenke, Phytologia 1: 443--444. 1940; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 33 & 88. 1942; Salisb., Ind. Kew. Suppl. 10: 53. 1947; H. N. & A. L. Moldenke, Plant Life 2: 79. 1948; Moldenke, Alph. List Cit. 3: 857. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 69 & 179. 1949; Moldenke, Résumé 79 & 447. 1959.

Middle-sized forest tree with broad crown and thick, rather smooth bark exfoliating in longitudinal strips; branches and branchlets very stout and robust, hollow, brown, decidedly tetragonal, much flattened at the nodes, pulverulent--puberulent, usually decidedly corky-margined below the nodes; nodes annulate, the annulation deeply U-shaped (at least on one side); leaves decussate-opposite; petioles very stout, 3.5--4 cm. long, flattened above, ridged in drying, ampliate at the base, puberulent; leaf-blades very large, coriaceous, oval or ovate, 25--30 cm.

long, 15--19 cm. wide, dark-green above, somewhat lighter beneath, acute at the apex, entire, subtruncate at the base (rarely abruptly acute), glabrous above, densely appressed-tomentose beneath with yellowish many-branched hairs; midrib very stout, slightly impressed above, very prominent and merely puberulent beneath; secondaries strong, 11--16 per side, arcuate-ascending, very slightly impressed above, very prominent beneath with the pubescence wearing off on the most elevated portions; vein and veinlet reticulation abundant, only the coarsest portions prominent beneath, only the finest portions (!) visible above; inflorescence axillary, spicate; spikes opposite, solitary, 13--21 cm. long, about 2 cm. wide during anthesis, densely many-flowered; peduncles stout, 2.5--3 cm. long, densely furfuraceous-tomentose with cinereous hairs, angulate in drying; rachis stout, thicker than the peduncle, more densely cinereous-tomentose with longer hairs than the peduncles; bracts and bractlets none; prophylla conspicuous (especially when the calyxes have dropped off), reflexed, 1.5--2 mm. long, densely tomentose, linear-subulate; pedicels none; calyx during anthesis very large and heavy, more or less inflated, 5.5--7 mm. long, tubular or broadly cupuliform to urceolate, densely short-tomentose, often 5-costate with darker or less pubescent lines, its rim 5-toothed, the teeth broadly triangular, about 1 mm. long, acute at the apex; corollas not seen; immature fruiting-calyx decidedly urceolate, almost enclosing the fruit, very decidedly inflated, with the 5 dark costae very conspicuous; immature fruit globose.

The type of this outstanding species was collected by August Rimbach (no. 374) in the forested region between Río Chimbo and the village of Balsapampa, in the Western Cordillera, at an altitude of 2500 meters, Los Ríos, Ecuador, in December, 1934, and is deposited in the herbarium of the Naturhistoriska Riksmuseum at Stockholm. The collector notes that only the young twigs are hollow, that the calyx is fleshy and greenish, that the corolla is white and has 5 or 6 segments, that there are 5 anthers, and 1 short style. The species is apparently closely related to *C. montanum* Moldenke and *C. subflavescens* Blake. It is thus far known only from the type collection. In all, 2 herbarium specimens, including the type, and 2 mounted photographs have been examined.

Citations: ECUADOR: Los Ríos: Rimbach 374 (N--isotype, N--photo of type, S--type, Z--photo of type).

CITHAREXYLUM ROSEI Greenm., Field Columb. Mus. Publ. Bot. 2: 260. 1907.

Literature: Greenm., Field Columb. Mus. Publ. Bot. 2: 260. 1907; Prain, Ind. Kew. Suppl. 4: 49. 1913; Moldenke, Alph. List Common Names 10. 1939; Moldenke, Geogr. Distrib. Avicenn. 13. 1939; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 16 & 88. 1942; Moldenke, Phytologia 2: 97. 1944; Moldenke, Alph. List Cit. 1: 307. 1946; H. N. & A. L. Moldenke, Pl. Life 2: 79. 1948; Moldenke, Alph. List Cit. 2: 423 & 499 (1948), 3: 834, 872, & 883 (1949), and 4: 1028 & 1031. 1949; Moldenke, Known



Geogr. Distrib. Verbenac., [ed. 2], 29 & 179. 1949; Moldenke, Résumé 35 & 447. 1959.

Shrub or small tree, to 2.5 m. tall, with the aspect of a species of Lycium; branches and branchlets medium or slender, woody, stiff, blackish, obtusely tetragonal, very minutely puberulent or glabrate, sparsely light-lenticellate; twigs slender, very light-gray, rather sharply tetragonal and ribbed, densely incanous-puberulent; nodes very obscurely annulate, thickened; principal internodes 0.4--4.9 cm. long, mostly much abbreviated; leaf-scars very small, borne on very small and inconspicuous sterigmata or subsessile; leaves decussate-opposite, crowded on very young twigs; petioles very slender, 1--2 mm. long or almost obsolete, densely incanous-short-pubescent; leaf-blades chartaceous when mature, uniformly grayish-green on both surfaces, elliptic-oblong, 1--3 cm. long, 4--9 mm. wide, abruptly acute at the apex, entire and revolute along the margins in drying when mature, cuneate at the base and prolonged into the petiole, not glanduliferous, puberulent-scabrellous above, densely incanous-short-pubescent beneath, more or less incanous-pubescent on both surfaces when immature; midrib very slender, more or less impressed above, slightly prominulent beneath; secondaries several pairs, very obscure; vein and veinlet reticulation indiscernible; racemes axillary or terminating extremely short axillary twigs, less than 2 cm. long, few-flowered, simple; peduncles and rachis very slender, abbreviated or subobsolete, incanous-pubescent; pedicels slender, about 1 mm. long during anthesis, elongate to 5 mm. in fruit, densely incanous-short-pubescent; bracts and bractlets absent, or, if present, few and leaf-like; prophylla not obvious; flowers not seen; fruiting-calyx light and herbaceous, very shallowly cupuliform or patelliform, 2--2.5 mm. long and 6 mm. wide, short-pubescent, its rim truncate and subentire or 4-angulate; fruit drupaceous, oblong, fleshy, 7--8 mm. long, about 7 mm. wide when mature, greatly wrinkled in drying, nigrescent and 2-sulcate in drying, glabrous, shiny; pyrenes elliptic, 6--7 mm. long, concavo-convex, strongly corrugated on the outer or convex surface.

The type of this species was collected by Joseph Nelson Rose, Joseph Hannum Painter, and Joseph Sims Rose (no. 9827) near San Pablo, Querétaro, Mexico, on August 24, 1905, and is deposited in the United States National Herbarium at Washington. It is named in honor of Joseph Nelson Rose [not "John Nelson Rose... and his son" as stated in Pl. Life 2: 79. 1948]. The Altamirano specimen cited below is anomalous in having glabrous twigs and glabrate leaves and fruiting-calyxes, but in all other respects it agrees well with the type material. For it the common name "del ciervo á Sn. Juan" has been recorded. The Rusby collection is very immature, being only in bud, and this probably accounts for its very tiny, thin, flat, and crowded leaves. In the characters of its branches, branchlets, and twigs it matches the type collection precisely.

Greenman notes that the species resembles C. altamiranum Greenm., "to which it is closely related, but from which it dif-

fers amply in having smaller leaves of different outline, a more dense tomentum, and in its shorter, shallower, and truncate calyx, and corrugated pyrenae." Gentry found the species in reddish-brown clay-loam derived from igneous rocks, among rocks in oak-juniper grasslands, at altitudes of 2400 to 2500 meters, fruiting in September. In all, 11 herbarium specimens, including the type, and 7 mounted photographs have been examined.

Citations: MEXICO: Durango or Zacatecas: H. S. Gentry 8564 (W--2022214). Guanajuato: H. H. Rusby 43 (W--5745510). Querétaro: Altamirano 1761 (N, W--570774); Rose, Painter, & Rose 9827 (B--photo of type, E--717430--photo of type, F--195707--isotype & photo of type, K--photo of type, N--isotype, N--photo of type, S--photo of type, W--453317--type, Z--photo of type), 9828 (N, N, W--453318). San Luis Potosí: Purpus 5047 (Ca--153348).

CITHAREXYLUM ROSEI var. DURANGENSE Moldenke, Phytologia 2: 14 [as "durangensis"]. 1941.

Synonymy: Rauwolfia lycioides Cav., Anal. Cienc. Nat. 5: 69--70. 1802.

Literature: Cav., Anal. Cienc. Nat. 5: 69--70. 1802; Jacks., Ind. Kew. 2: 693. 1895; Moldenke, Phytologia 2: 14. 1941; J. A. Clark, Card Index issue 172. 1941; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 16 & 88 (1942) and [ed. 2], 29 & 179. 1949; Moldenke, Alph. List Cit. 3: 933. 1949; Rao, Ann. Mo. Bot. Gard. 43: 347. 1956; Moldenke, Résumé 35, 258, & 447. 1959.

This variety differs from the typical form of the species in having its leaf-blades only very minutely and obscurely puberulent on both surfaces with very short appressed grayish hairs.

The type of the variety was collected by my friend and colleague, Forrest Shreve (no. 9122), on outwash plains near Pasaje, at an altitude of 4650 feet, Durango, Mexico, on August 23, 1939, and is deposited in his herbarium at Tucson, Arizona. He describes the plant as a shrub 6 feet tall, with its mature fruit red in color. Gentry found it common in chaparral in rocky soil, at an altitude of 1700 meters, fruiting in September. He calls it a chaparral shrub. It is possible that the glabrate Altamirano specimens cited under C. rosei Greerm. may rather belong here.

The type of Rauwolfia lycioides was taken from a cultivated plant growing in the Royal Botanic Garden at Madrid on June 17, 1801, from seeds secured in Nueva España [probably somewhere in Mexico] before 1800, where it is said to be called "cacao blanco". It is very possible that it belongs in the synonymy of C. racemosum Sessé & Moc. rather than here. Only a photograph of the type has been seen by me.

In all, 3 herbarium specimens, including the type of the variety, and 3 mounted photographs have been examined.

Citations: MEXICO: Durango: H. S. Gentry 8286 (W--1978901); Shreve 9122 (Fs--type, N--isotype, N--photo of type, Z--photo of type). CULTIVATED: Spain: Herb. Hort. Bot. Matrit. s.n. (Z--

photo).

CITHAREXYLUM SCABRUM Sessé & Moc. ex D. Don, Edinb. New Philos. Journ. 11 [Jan.—Mar.]: 238. 1831 [not C. scabrum Willd., 1832].

Synonymy: Citharexylum incanum Sessé & Moc. ex D. Don, Edinb. New Philos. Journ. 11 [Jan.—Mar.]: 238. 1831. Citharexylon incanum Sessé & Moc. apud Walp., Repert. 4: 73—74. 1845. Citharexylon scabrum Moc. & Sessé apud Walp., Repert. 4: 74. 1845.

Citharexylum scabrum Moc. & Sessé apud Schau. in A. DC., Prodr. 11: 614. 1847. Citharexylum cinaloanum B. L. Robinson, Bot. Gaz. 16: 342. 1891. Citharexylum incanum Moc. & Sessé apud Jacks.,

Ind. Kew. 1: 550. 1893. Cytarexylon scabrum Sessé & Moc. ex Moldenke, Prelim. Alph. List Invalid Names 24, in syn. 1940.

Cytarexylon scatrum Sessé & Moc. ex Moldenke, Suppl. List Invalid Names 3, in syn. 1941.

Literature: D. Don, Edinb. New Philos. Journ. 11 [Jan.—Mar.]: 238. 1831; Walp., Repert. 4: 73—74. 1845; Schau. in A. DC., Prodr. 11: 614. 1847; B. L. Robinson, Bot. Gaz. 16: 342. 1891; Jacks., Ind. Kew. 1: 549—550. 1893; T. S. Brandeg., Zoe 5: 219. 1900; Greenm., Field Columb. Mus. Publ. Bot. 2: 259—260. 1907; Hill, Ind. Kew. Suppl. 6: 47. 1926; Moldenke, Geogr. Distrib. Avicenn. 13. 1939; Moldenke, Alph. List Common Names 17 & 24. 1939; Moldenke, Prelim. Alph. List Invalid Names 16 & 24. 1940; Moldenke, Suppl. List Invalid Names 3. 1941; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 16 & 88. 1942; Moldenke, Alph. List Invalid Names 14 & 22. 1942; Moldenke, Phytologia 2: 97. 1944; Moldenke, Alph. List Cit. 1: 57, 192, 241, 242, 273, 309, & 311 (1946), 2: 334, 339, 419, 421, 465, 472, & 498 (1948), 3: 788, 829, 870, 873, & 926 (1949), and 4: 1019, 1024, 1030, 1032, 1040, & 1051. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 29 & 179. 1949; H. N. & A. L. Moldenke, Anal. Inst. Biol. Mex. 20: 4. 1949; Moldenke, Résumé 35, 253—256, 258, 277, & 447. 1959.

Rather slender bush, shrub, or tree, to 4 m. tall; stem to 10 cm. in diameter; branches and branchlets medium, rather acutely tetragonal, light-brown or grayish, very minutely puberulous or glabrescent; twigs slender, grayish-brown, rather densely short-pubescent or becoming glabrescent; nodes obscurely annulate; principal internodes 1—4.5 cm. long; leaves decussate-opposite or approximate; leaf-scars often borne on stoutish, divergent, corky sterigmata to 5 mm. long; petioles very slender, 6—20 mm. long, shortly pilose-pubescent; leaf-blades very firmly chartaceous, dark-green or (usually) grayish-green, oblong or oblong-lanceolate to elliptic or ovate, sometimes obovate, 2.5—10.5 cm. long, 0.8—5.5 cm. wide, acute or short-acuminate at the apex, coarsely and irregularly dentate along the margins (except at the apex and base, rarely dentate also at the apex) with large and broad-based triangular teeth, often merely angulate or sinuate to subentire or entire, acuminate or subcuneate at the base, very scabrous above, rather densely short-pubescent beneath, beauti-

fully reticulate, usually bearing a pair of very small glands at the base; midrib slender, plane or subimpressed above, prominent beneath; secondaries very slender, 4--7 pairs, arcuate-ascending, slightly prominulent beneath; vein and veinlet reticulation fine, mostly rather obscure above and very slightly prominulent beneath; racemes axillary and terminal, erect or nutant, 4--45 cm. long, about 1 cm. wide, simple or irregularly compound with 1 or 2 pairs of branches, many-flowered; peduncles and rachis slender, densely short-pubescent, the former 6--15 mm. long; pedicels filiform, 2--3.5 mm. long, short-pubescent; bracts absent; bractlets few (or none), oblong and stipitate or linear, about 1 mm. long or less; prophylla minute, setaceous, about 1 mm. long; flowers often subsessile; calyx campanulate, about 2 mm. long, striate, pubescent, its rim 5-dentate, the teeth very short, acuminate at the apex, slightly spreading or recurved, not reflexed, equal or subequal to unequal with the anterior and posterior ones larger; corolla white, about 3 mm. long, pubescent externally and within, its lobes erect; fertile stamens 4; staminode 1, rudimentary; style glabrous; fruiting-calyx incrassate, indurate, cupuliform, about 3 mm. long and 6 mm. wide, minutely puberulent, its rim shallowly and more or less irregularly erose; fruit oblong, about 6 mm. long, 4--5 mm. wide, fleshy, glabrous, shiny, black and wrinkled in drying.

The type of this species was collected by Martín Sessé y Lacasta, José Mariano Mociffo, Juan Diego del Castillo, and José Maldonado (no. 2369) somewhere in Mexico in or before 1831 and is deposited in the herbarium of the Jardim Botanico at Madrid. The type of C. incanum was gathered by the same collectors (no. 2367), also somewhere in Mexico in or before 1831 and is also deposited at Madrid. The type of C. cinaloanum was collected by William Greenwood Wright (no. 1225) at Mazatlan and vicinity, Sinaloa, Mexico, in December, 1888, and is deposited in the Gray Herbarium at Harvard University. The latter represents the small-leaved form of the species. The large-leaved and long-inflorescenced form is usually identified as C. incanum, but all manner of intermediate specimens occur.

The species is exceedingly variable in leaf-size and -shape and in the length of the racemes, but it may always be recognized by the scabrous upper leaf-surface. Common names recorded for it are "jito siropo", "panothillo", and "salacate". Endlich reports that the fruits are eaten by birds. It has been collected in anthesis in April, July, September, October, and December, and in fruit in March, April, August to October, and December. It inhabits wet soil, hedgerows, and thickets along riverbanks. Wright reports that the foliage when fresh is "whitish".

The Pringle specimen cited below is a mixture, probably representing another collection entirely. The Ortega 927, also cited below, is from Rosario, Cacalotan, and may be either from Nayarit or Sinaloa.

The species has been confused in herbaria with C. berlandieri B. L. Robinson and C. reticulatum H.B.K., as well as with the



genus Cordia in the Ehretiaceae. Robinson says that it is closely related to C. berlandieri, "but differing in its larger, usually more acuminate leaves, its campanulate rather than turbinate calyx with acute instead of blunt lobes, in the erect lobes of the corolla, and the glabrous style; the corolla-lobes in C. berlandieri being larger and more spreading and the upper part of the style puberulent." He also says "The affinity of C. cinaloanum is in all probability with the obscure C. scabrum Moc. & Sessé, and it may eventually prove to be conspecific. The leaf-margins on an individual plant often vary from entire to conspicuously dentate in the apical portion; and the inflorescence, here as in several other species of the genus, may be either simple or compound."

In all, 60 herbarium specimens, including the types of all the names involved, and 13 mounted photographs have been examined.

Citations: MEXICO: Baja California: T. S. Brandege s.n. [Miraflores] (A, Ca--104981, Ca--104982, G, N, Po--63505, Po--71176, W--873665). Nayarit: J. Gonzalez Ortega 927 (Me). San Luis Potosí: Pringle 3222b (Ca--104980). Sinaloa: T. S. Brandege s.n. [Culiacan, Sept. 14] (Ca--104984), s.n. [Culiacan, Oct. 12] (Ca--104983); Endlich 714 (B); J. Gonzalez Ortega 4734 (W--1268430), 5517 (D--651076, G, K, W--1207558), 6410 (Cp, D--650730, Du--170424, G, Gg--160853, Mu, N--photo, W--1269657, Z--photo), 6923 (F--709194, Gg--202813); Edw. Palmer 1523 (Cp, F--707753, Fs, G, G, Mi, S, W--305274, W--567742, W--567743); J. N. Rose 1858 (F--216151, G, W--300741), 3269 (F--216152, W--302244); Rose, Standley, & Russell 13397 (E--895196, N, W--636222), 14949 (E--895234, G, W--637825); W. G. Wright 1225 (B--photo, Ca--25099, Du--90903, E--119051, F--267510, G, K--photo, N--photo, S--photo, W--42712, X, Z--photo). State undetermined: Sessé, Mocillo, Castillo, & Maldonado 2367 (F--849578, It--photo, N--photo, Q, Z--photo), 2369 (F--851474--isotype, N--isotype, N--photo of type, Q--type, S--photo of type, Z--photo of type).

CITHAREXYLUM SCHOTTII Greenm., Field Columb. Mus. Publ. Bot. 2: 190. 1907.

Synonymy: Citharexylum quadrangulare Millsp. apud Greenm., Field Columb. Mus. Publ. Bot. 2: 190, in syn. 1907 [not C. quadrangulare L., 1786, nor Sessé & Moc. 1831 and 1894, nor Schau., 1864, nor Boutelou, 1909, nor Griseb., 1909, nor Jacq., 1909, nor A. Rich., 1909, nor Hort., 1911, nor Citharexylon quadrangulare Jacq., 1760]. Citharexylon schottii Greenm., in herb.

Literature: Millsp., Field Columb. Mus. Publ. Bot. 1: 386. 1898; Greenm., Field Columb. Mus. Publ. Bot. 2: 190. 1907; Prain, Ind. Kew. Suppl. 4: 49. 1913; Standl., Field Mus. Publ. Bot. 3: 400. 1930; Moldenke, Geogr. Distrib. Avicenn. 14 & 36. 1939; Moldenke, Alph. List Common Names 8. 1939; Moldenke, Prelim. Alph. List Invalid Names 17. 1940; Moldenke, Suppl. List Common

Names 10, 16, 22, & 24. 1940; Moldenke, Carnegie Inst. Wash. Publ. 522: 192--193. 1940; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 16, 71, & 88. 1942; Moldenke, Alph. List Invalid Names 15. 1942; Moldenke, Phytologia 2: 97. 1944; Moldenke, Alph. List Cit. 1: 227, 228, 299, 300, 307, 315, 316, & 318. 1946; Moldenke, Phytologia 2: 330--331. 1947; H. N. & A. L. Moldenke, Pl. Life 2: 82. 1948; Moldenke, Alph. List Cit. 2: 329, 330, 334, 352, 356, 357, 419, 426, 447, 460, 502, & 565 (1948), 3: 679, 907, 964, & 965 (1949), and 4: 1020, 1031, 1053, 1186, 1187, 1232, & 1239. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 29, 39, 158, & 179. 1949; Moldenke, Phytologia 3: 465. 1951; Moldenke, Résumé 35, 46, 215, 254, 258, & 447. 1959.

Arborescent shrub, treelet, or tree, to 10 m. tall; trunk to 5 cm. in diameter; stems covered with gray bark and dotted with numerous lenticels; branches and branchlets acutely tetragonal and ribbed, brown or brownish, minutely pulverulent or glabrate, the branchlets and twigs medium or slender; nodes obscurely annulate; principal internodes 2--5.5 cm. long; leaf-scars small, borne on very small and short sterigmata; leaves decussate-opposite (or approximate on vigorous shoots); petioles very slender, 7--20 mm. long, glabrous; leaf-blades chartaceous, dark-green above, brunnescent or nigrescent in drying, lighter beneath, dull, lanceolate-oblong or narrowly oblong-elliptic, 3.3--10.5 cm. long, 2--3 cm. wide, acute or acuminate at the apex, entire, acuminate at the base and attenuate into the petiole, usually with a pair of small black glands at the very base, glabrate on both surfaces; midrib slender, prominent beneath; secondaries very slender and delicate, 5--7 pairs, arcuate-ascending, slightly prominent on both surfaces; vein and veinlet reticulation fine, mostly obscure; racemes axillary and terminal, numerous, erect or nutant, simple or compound with 1 or 2 pairs of branches, mostly short, 3--9.5 cm. long, about 1 cm. wide, many-flowered; peduncle and rachis slender, glabrous or subglabrate, nigrescent, the former 4--11 mm. long; pedicels filiform, 1--1.5 mm. long, glabrate, to 3 mm. long in fruit; bracts large and leaf-like or (usually) absent; bractlets linear, 5 mm. long or longer; prophylla setaceous-subulate, about 1 mm. long; calyx tubular-campanulate, about 2.5 mm. long, 5-angled in cross-section, its rim sinuately 5-dentate; corolla about twice as long as the calyx, pale yellow-green or pale-green, externally glabrous or essentially so, pubescent in the throat within, its tube surpassing the calyx, obconic, the lobes oblong-rotund, pubescent on the inner surface, ciliolate; fruiting-calyx cupuliform, about 3 mm. long and 5.5 mm. wide, usually nigrescent, very minutely puberulent or glabrous and shiny, its rim subtruncate, subentire or 5-angulate; fruit oblong or oblong-obovate, 5--7 mm. long, about 4 mm. wide, rather fleshy, wrinkled and nigrescent in drying and deeply 2-sulcate.

The type of this characteristic species was collected by Arthur Carl Victor Schott (no. 575) at Mérida, Yucatán, Mexico, on July 28, 1865, and is deposited in the herbarium of the Chicago Natural History Museum. The species has been confused by

herbarium workers and misidentified by them as C. caudatum L., C. integerrimum (Kuntze) Moldenke, C. subserratum Sw., Cytherexilum cinereum Sessé & Moc., Clerodendrum sp., and even as possibly a member of the Ehretiaceae. It has been collected in forests, young legume thickets, dooryards, and second growth on lake shores, in anthesis from May to August and in November, and in fruit in November. Gaumer describes it as common at Izamal, Yucatán. It is remarkably constant in its characters, the nigrescent leaves and racemes and the numerous short racemes characterize it well.

Greenman states that the species differs from C. quadrangulare Jacq. [= C. spinosum L.] "in its more profuse inflorescences, smaller fruit, etc. Superficially C. schottii resembles C. glabrum, Greenm., but from this species again it differs in having the spicate branches of the panicle erect or ascending, and in having also a proportionately shorter corolla-tube, and the lobes of the corolla glabrous or essentially so on the outer surface."

Standley, in the reference listed above, records the vernacular names "iximche", "palo de violín", and "tatakche", and comments that "The 'ixtatakche' listed by Pérez is probably a different plant. It is described as a 'herba', and is said to be applied to old sores to heal them." Steere records the name "chacni-bach" for his specimen no. 1337, while the Lundells list "xchobenche" on the label of their no. 7878. Millspaugh, in the work listed above, cites Schott 89 under "Citharexylum quadrangulare Jacq." from Mérida, but according to notes on the British Museum specimen of this number, this collection is from Havana, Cuba, and examination proves it to be C. fruticosum var. subvillosum Moldenke, a form not known from the Yucatán area. The two Schott s.n. specimens, however, cited below, are from the type locality of C. schottii.

In all, 84 herbarium specimens, including the types of all the names involved, and 5 mounted photographs have been examined.

Citations: MEXICO: Quintana Roo: G. F. Gaumer 1944 (B, E--954110, F--58742, N, S, W--1267531); Lundell & Lundell 7781 (Mi, Mi, N). Yucatán: G. F. Gaumer 765 (A, B, Bm, Br, Ca--446261, Cp, D--763211, Du--206186, E--15, Gg--160785, I, K, Lu, Mi, N, S, V--10655, W--571769), 765 bis (F--36568, F--58012--fruit, F--437594), 23163 (F--437557), 23466 (V--10646), 24037 (Bm, Cb, Cp, E--951563, F--552039, N, S, W--1268134); Gaumer & sons 23463 (Cb, E--953730, F--460221, N, W--1267773); Lundell & Lundell 7878 (Mi, Mi, N), 8132 (Ld, Mi, Mi, N); A. C. V. Schott 575 (B--photo of type, Bm--isotype, Br--isotype, E--119063--isotype, F--195495--type, K--photo of type, N--photo of type, S--photo of type, Z--photo of type), s.n. [VIII.25.1865] (W--57330), s.n. [IX.22.1865] (W--57329); Steere 1337 (E--1087172, F--668647, I, La, Me, Me, Mi, S), 1419 (F--668591, F--698545, Mi, Mi), 1660 (F--668590, Mi), 7161

(Me). State undetermined: Herb. Fischer s.n. (L, L, L). COSTA RICA: Alajuela: Brenes 15532 [49] (N). CULTIVATED: France: Herb. Hort. Paris s.n. [Jul. 1825] (L, L). Italy: Herb. Harvey s.n. [h. R. P., h. f. 1844] (Du--166407). Java: Huitema s.n. [30-9-1942] (Bz--18720); Lam 3836 (Bz--18721). Locality of collection undetermined: Herb. Harvey s.n. (Du--166408). LOCALITY OF COLLECTION UNDETERMINED: Herb. Harvey s.n. (Du--166404, in part).

CITHAREXYLUM SCHULZII Urb. & Ekm. ex Urb., Arkiv Bot. 22a, no. 17: 108. 1929.

Literature: Urb., Arkiv Bot. 22a, no. 17: 108. 1929; Hill, Ind. Kew. Suppl. 8: 53. 1933; Moldenke, Geogr. Distrib. Avicenn. 7. 1939; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 26 & 88. 1942; Moldenke, Alph. List Cit. 1: 188 & 189. 1946; Moldenke, Phytologia 2: 384. 1947; H. N. & A. L. Moldenke, Pl. Life 2: 82. 1948; Moldenke, Alph. List Cit. 2: 570 (1948) and 4: 1054 & 1066. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 47 & 179. 1949; Moldenke, Résumé 56 & 447. 1959.

Shrub, to 1.8 m. tall; branches heavy, woody, rigid; branchlets and twigs slender, obtusely or acutely tetragonal, gray or brownish, lenticellate, furfuraceous-puberulent; nodes annulate; principal internodes 0.7--7.4 cm. long; leaf-scars large, borne on large, heavy, divergent-ascending, corky sterigmata to 3 mm. long; leaves decussate-opposite; petioles stout, ampliate at the base, 4--6 mm. long, furfuraceous-puberulent; leaf-blades heavy-coriaceous, light-green on both surfaces, rather shiny above, oblong-elliptic or subobovate, 2--4 cm. long, 8--25 mm. wide, rounded and emarginate or subapiculate at the apex, entire and slightly subrevolute along the margins, acute at the base and often slightly asymmetric there, bearing a pair of black glands at the very base, glabrate and roughened (but not scabrous!) above, densely short-pubescent beneath; midrib strong throughout its length, subimpressed above, very prominent beneath; secondaries slender, 3--6 pairs, subimpressed or obscure above, irregular, very prominent beneath; vein and veinlet reticulation abundant, indiscernible above, very prominent to the last detail beneath; racemes axillary or terminal, abbreviated, 1--2 cm. long, about 1 cm. wide, many-flowered, dense, simple, erect; peduncles and rachis rather stout and heavy, densely brown-pubescent, the former extremely much abbreviated; pedicels stoutish, about 1 mm. long, densely pubescent; bracts and bractlets none; prophylla setaceous, about 1 mm. long, pubescent; corolla white; fruit red.

The type of this very distinct species was collected by Erik Leonard Ekman (no. H.7654) on the slope towards Camp-Franc, Croix-des-Bouquels Badeau, Massif de la Selle, Haïti, at an altitude of about 1300 meters, on February 22, 1927, and is deposited in the herbarium of the Naturhistoriska Riksmuseum at Stockholm. The collector describes the plant as rare.

It is one of the most unmistakable members of the entire genus because of its small coriaceous leaf-blades and the pronoun-



cedly prominent vein-reticulation on the under surface after the manner of that seen in Callicarpa cubensis Urb. and C. crassinervis Urb. It inhabits the rocky slopes of gulches and limestone areas in pine woods. It has been collected in anthesis in January and February, and in fruit in August, at altitudes of 1300 to 1400 meters. It is named in honor of Otto Eugen Schulz (1874--1936), distinguished German taxonomist. In all, 14 herbarium specimens, including the type, and 4 mounted photographs have been examined.

Citations: HISPANIOLA: Dominican Republic: Howard & Howard 8252 (N, N, S). Haiti: Ekman H.3131 (B, N, S, S), H.7654 (B--isotype, B--photo of type, N--isotype, N--isotype, N--photo of type, N--photo of type, S--type, S--isotype, W--1304030--isotype, W--1479666--isotype, Z--photo of type).

CITHAREXYLUM SESSAEI D. Don, Edinb. New Philos. Journ. 11 [Jan.--Mar.]: 238. 1831.

Synonymy: Citharexylum quadrangulare Sessé & Moc. ex D. Don, Edinb. New Philos. Journ. 11 [Jan.--Mar.]: 238, in syn. 1831 [not C. quadrangulare L., 1786, nor Hort. Madrit., 1845, nor Schau., 1864, nor Sessé & Moc., 1894, nor Millsp., 1907, nor Boutelou, 1909, nor Griseb., 1909, nor Hort., 1911, nor Jacq., 1909, nor A. Rich., 1909, nor Citharexylon quadrangulare Jacq., 1760].

Citharexylon quadrangulare Moc. & Sessé ex Walp., Repert. 4: 75, in syn. 1845. Citharexylum quadrangulare Moc. & Sessé ex Schau. in A. DC., Prodr. 11: 614, in syn. 1847. Citharexylum sessaei Don ex Moldenke, Alph. List Invalid Names Suppl. 1: 5, in syn. 1947. Citharexylon sessei D. Don ex Moldenke, Résumé 254, in syn. 1959.

Literature: D. Don, Edinb. New Philos. Journ. 11 [Jan.--Mar.]: 238. 1831; Walp., Repert. 4: 75. 1845; Schau. in A. DC., Prodr. 11: 614. 1847; Jacks., Ind. Kew. 1: 550. 1893; Velenovsky, Vergl. Morphol. Pfl. 2: 492. 1907; Stapf, Ind. Lond. 2: 220. 1930; Moldenke, Geogr. Distrib. Avicenn. 14. 1939; Moldenke, Prelim. Alph. List Invalid Names 17 & 24. 1939; Moldenke, Alph. List Invalid Names 15 & 23. 1942; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 16 & 88. 1942; Moldenke, Alph. List Invalid Names Suppl. 1: 5. 1947; H. N. & A. L. Moldenke, Pl. Life 2: 83. 1948; Moldenke, Alph. List Cit. 2: 339 & 543 (1948), 3: 659, 660, & 926 (1949), and 4: 1208. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 29 & 179. 1949; Moldenke, Phytologia 3: 284. 1950; Moldenke, Résumé 35, 254, 258, & 447. 1959.

Illustrations: Velenovsky, Vergl. Morphol. Pfl. 2: 492. 1907. Small tree, to almost 5 m. tall; bark fairly smooth, with vertical cracks, the color often obscured by lichens; branches tetragonal; leaves ovate, 4--7.5 cm. long, thin-membranous, acuminate at the apex, entire, subacute or rather obtuse to rounded at the base, glabrescent above in age (pubescent when immature), persistently pubescent beneath, pinnately veined; racemes spiciform, elongate, to 21 cm. long, nutant.

The type of this puzzling and little-known species was collected by Martín Sessé y Lacasta, José Mariano Mociffo, Juan Diego del Castillo, and José Maldonado (no. 2273) in Michoacán, Mexico, and is deposited in the herbarium of the Jardín Botánico at Madrid. It has been collected in fruit in June. In all, 3 herbarium specimens, including the types of all the names involved, and 2 mounted photographs have been examined. The species is very close to C. ovatifolium Greenm., and the two may eventually prove to be conspecific. Don states that it is related to C. pulverulentum Pers. [= C. pentandrum Vent.] and to C. quadrangulare Jacq. [= C. spinosum L.], while Schauer maintains that it is closest to C. villosum Jacq. [= C. fruticosum var. villosum (Jacq.) O. E. Schulz].

Citations: MEXICO: Michoacán: Sessé, Mociffo, Castillo, & Maldonado 2273 (N--photo of type, Q--type, Z--photo of type). San Luis Potosí: R. J. Newman 23 (W--1949106). LOCALITY OF COLLECTION UNDESIGNATED: Collector undesignated 56, in part (Q).

CITHAREXYLUM SHREVEI Moldenke, Geogr. Distrib. Avicenn. 14, nom. nud. (1939); Phytologia 1: 415. 1940.

Literature: Moldenke, Geogr. Distrib. Avicenn. 14. 1939; Moldenke, Phytologia 1: 415. 1940; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 16 & 88. 1942; Salisb., Ind. Kew. Suppl. 10: 53. 1947; H. N. & A. L. Moldenke, Pl. Life 2: 83. 1948; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 29 & 179. 1949; Moldenke, Alph. List Cit. 3: 698. 1949; Moldenke, Résumé 35 & 447. 1959.

Shrub; branches and branchlets slender, gray, subterete; twigs extremely slender and tenuous, white or very light-gray, minutely puberulent with very short albidous hairs, obtusely tetragonal; principal internodes 0.4--2.5 cm. long; nodes not annulate; leaves decussate-opposite; petioles very slender, less than 1 mm. long or obsolete; leaf-blades chartaceous, gray-green on both surfaces, narrowly oblong or elliptic, 0.4--2.2 cm. long, 2.5--5.5 mm. wide, bluntly acute or obtuse at the apex, entire and usually more or less revolute along the margins, acute or subcuneate at the base, strigillose-roughened on both surfaces with minute albidous bulbous-based hairs; midrib very slender, very slightly prominent beneath; secondaries about 3 per side, very slender, usually indiscernible above and obscure beneath; vein and veinlet reticulation indiscernible; inflorescence and fruit not known.

The type of this species was collected by Daniel Trembly Mac Dougal and Forrest Shreve (no. 59) at Picu Pass, Sonora, Mexico, on November 19, 1923, and is deposited in the United States National Herbarium at Washington. It is named in honor of Dr. Forrest Shreve, who has contributed so much to our knowledge of the flora and ecology of the southwestern portion of the United States and of Mexico. The species is obviously related to C. brachyanthum (A. Gray) A. Gray and to C. lycioides D. Don. Thus far it is known only from the type collection. In all, 2 herbarium specimens, including the type, and 2 mounted photographs

have been examined.

Citations: MEXICO: Sonora: MacDougal & Shreve 59 (N--isotype, N--photo of type, W--1167133--type, Z--photo of type).

CITHAREXYLUM SOLANACEUM Cham., Linnaea 7: 119--120. 1832.

Synonymy: Citharexylon solanaceum Cham. apud Steud., Nom. Bot., ed. 2, 1: 375. 1840.

Literature: Cham., Linnaea 7: 119--120. 1832; Steud., Nom. Bot., ed. 2, 1: 375. 1840; Walp., Repert. 4: 76. 1845; Schau. in A. DC., Prodr. 11: 613. 1847; Schau. in Mart., Fl. Bras. 9: 268. 1851; Jacks., Ind. Kew. 1: 550. 1893; Glaz., Bull. Soc. Bot. France Mém. 3: 545. 1911; Moldenke, Geogr. Distrib. Avicenn. 26. 1939; Moldenke, Prelim. Alph. List Invalid Names 15. 1940; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 36 & 88. 1942; Moldenke, Alph. List Invalid Names 13. 1942; Moldenke, Alph. List Cit. 1: 170, 171, 226, & 238. 1946; Augusto, Fl. Rio Grande do Sul 229 & 236. 1946; Moldenke, Alph. List Cit. 2: 428 (1948), 3: 921--923 (1949), and 4: 1066. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 76 & 179. 1949; Moldenke, Phytologia 3: 134. 1949; Stellfeld, Trib. Farmac. 19 (10): 169. 1951; Rambo, Anais Bot. Herb. Barbosa Rod. 3: 72. 1951; Rambo, Sellowia 7: 288. 1956; Moldenke, Résumé 88, 254, 258, & 447. 1959.

Shrub or tree, to 10 m. tall; branchlets slender, very obtusely tetragonal or subterete, gray, glabrate, unarmed; twigs slender, more or less tetragonal, very densely villous-tomentose with short fulvous hairs; nodes obscurely annulate; principal internodes 1--5 (mostly about 2.5) cm. long; leaf-scars borne on large divergent sterigmata to 3 mm. long; leaves decussate-opposite or subopposite; petioles rather stout, 1.2--3.5 cm. long, densely short-hirsute; leaf-blades chartaceous, dark-green above, lighter beneath, dull, lanceolate-oblong or elliptic-lanceolate to elliptic, 6--18 cm. long, 2.2--6.7 cm. wide, acute or acuminate at the apex, entire or with a few irregular angulate-apiculate teeth toward the apex, acute or cuneate at the base, very lightly pilosulous-pubescent or glabrescent above, densely hirsute-tomentose or velutinous-pubescent beneath, usually bearing a pair of elongate black crateriform glands parallel with the midrib at the very base; midrib slender or stoutish, prominent beneath; secondaries slender, 6--10 pairs, arcuate-ascending, plane or subimpressed above, prominent or prominent beneath; vein and veinlet reticulation abundant, obscure above, more or less prominent beneath (occasionally very conspicuously so); racemes axillary and terminal, spike-like, erect or nutant, simple or compound with a pair of basal branches, 4--20 cm. long, about 2 cm. wide during anthesis, very densely or very loosely many-flowered; peduncles and rachis slender, densely short-tomentose with fulvous hairs, the former 0.5--2 cm. long; pedicels very short and tomentose or obsolete; bracts and bractlets absent; prophylla setaceous or scale-like, longer than the pedicel, scarious, acute at the apex, densely tomentose; flowers very odorous; calyx firm, subtubular-cyathiform or urceolate-campulate, 4--6 mm. long, tomentose externally and with-

in or merely sericeous within, its rim regularly 5-dentate, the teeth small, green, distant, acute and mucronate, the sinuses broad, rectilinear, pellucid-membranous; corolla white, hypocrateriform, 10--13 mm. long, its tube twice as long as the calyx, glabrous except for the villous throat, its limb 5-parted, subactinomorphic, expanded, 8--10 mm. wide, the lobes obovate, obtuse at the apex; stamens 5, slightly unequal; filaments short; anthers linear; style short, thick, much shorter than the calyx; stigma scarcely thickened; ovary obovate; fruiting-calyx large, incrassate, indurated, shallowly cupuliform, about 6 mm. long and 12 mm. wide, short-pubescent, not ribbed, its margin irregularly erose; fruit oblong, about  $\frac{1}{4}$  mm. long and 12 mm. wide, glabrous, not very fleshy, dull.

This very distinctive species was based on several collections of Friedrich Sellow (nos. 3104, 3241, 4988, and s.n.), made in "Brasilia meridionalis" and deposited in the herbarium of the Botanisches Museum at Berlin. Two distinct forms occur, one with very densely flowered racemes, and the other with very loose-flowered racemes. The dense-flowered form also has somewhat smaller flowers and was marked "varietas" by Chamisso on the original annotation labels. It was designated as var.  $\beta$  by Walpers. In pubescence, leaf-shape and -size, and all other respects, however, the two forms are identical.

The species inhabits primeval forests, woods, the margins of woodlands and thickets, from 30 to 1000 meters altitude. It has been collected in flower in November and December, and in fruit in February. Vernacular names recorded for it are "taruma" and "tucamura" — the former is a name applied to many species of the genus Vitex in South America; "tarumá" is applied to C. montevidensis (Spreng.) Moldenke. In all, 57 herbarium specimens, including the original cotypes, and 4 mounted photographs and paintings have been examined.

Citations: BRAZIL: Paraná: Dusén 7069 (B, Cb, E--1035937, N, S, W--1481820), 7850 (S), 13828 (B, Cb, N, S, W--1481819); Hatschbach 1591 (N), 3756 (Sm), 4219 (Ok). Rio de Janeiro: P. Clausen 1101 (N, P); Glaziou 17715 (B, Cp, K, P, P), 18393 (B, Br, Cb, Cp, K, L, N, P). Rio Grande do Sul: K. Emrich s.n. [4. III.1939] (N--painting); Gaudichaud 500 (N, P); Rambo 6559 (Rb), s.n. [28.1.1938] (S). Santa Catarina: Reitz 994 (S), C.163 (N), C.1709 (N); Smith & Klein 11932 (N, Ok). São Paulo: Lutz & Lutz 1844 (Z). State undetermined: Sellow 3104 (B--cotype), 3241 (B--cotype, K--cotype), 4988 (B--cotype, B--cotype, S--photo of cotype), s.n. [Brasilia] (Bm--cotype, Dc--cotype, K--cotype, L--cotype, N--cotype, N--photo of cotype, P--cotype, V--cotype, Vt--cotype, Z--photo of cotype), s.n. ["varietas"] (B, B, B, N).

CITHAREXYLUM SOLANACEUM var. INSOLITUM Moldenke in Fedde, Repert. 37: 233--234. 1934.

Literature: Moldenke in Fedde, Repert. 37: 233--234. 1934;



Moldenke, Geogr. Distrib. Avicenn. 36. 1939; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 71 & 88. 1942; Moldenke, Alph. List Cit. 1: 52 (1946) and 4: 1137. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 158 & 179. 1949; Moldenke, Résumé 215 & 447. 1959.

This variety differs from the typical form of the species in its more sharply and acutely tetragonal branchlets and twigs, its light-gray branches and branchlets, its merely puberulent twigs, its conspicuously annulate nodes, the scabrellous-strigillose upper leaf-surface and densely brown-short-pubescent lower leaf-surface, its larger and more corky sterigmata, and its midrib and secondaries being impressed above.

The type of the variety was collected from a cultivated plant growing in the Botanical Garden at Victoria, Cameroons, and is deposited in the herbarium of the Botanisches Museum at Berlin. It had been confused in herbaria with C. quadrangulare Jacq. and C. spinosum L. Dr. Hubert Winkler, who apparently first collected material from the type tree, says that it is a tree 6 m. tall, with white flowers. In all, 3 herbarium specimens, including the type, and 4 mounted photographs have been examined.

Citations: CULTIVATED: Cameroons: Herb. Bot. Gard. Victoria 42 (B--type, K--photo of type, N--photo of type, S--photo of type, Z--photo of type); H. Winkler 1132 (B, N).

CITHAREXYLUM SOLANACEUM var. MACROCALYX Moldenke in Fedde, Repert. 37: 234. 1934.

Literature: Moldenke in Fedde, Repert. 37: 234. 1934; Moldenke, Geogr. Distrib. Avicenn. 26. 1939; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 36 & 88. 1942; Moldenke, Alph. List Cit. 2: 328 (1948), 3: 691 & 923 (1949), and 4: 1014. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 76 & 179. 1949; Moldenke, Phytologia 3: 74. 1949; Moldenke, Résumé 88 & 447. 1959.

This variety differs from the typical form of the species in having much longer and decidedly 2-lipped calyxes and usually narrower or even lanceolate leaf-blades. The calyx is tubular, 7.5--8 mm. long, 1.5--2.3 mm. wide, and its rim is very shortly 5-apiculate, 4 of the sinuses being about 0.2 mm. deep, while the fifth is about 3 mm. deep.

The type of the variety was collected by Friedrich Sellow somewhere in Brazil, and is deposited in the herbarium of the Botanisches Museum at Berlin. It is inscribed "Citharexylum solanaceum M. varietas" by Chamisso. The variety has been collected in anthesis in November, and in fruit in January, and is said to inhabit hills. In all, 9 herbarium specimens, including the type, and 10 mounted photographs have been examined.

Citations: BRAZIL: Rio Grande do Sul: Rambo 36422 (N). Santa Catarina: d'Urville s.n. (B); Ule 1159 (B, N--photo, P, Z--photo), 1538 (B, P). State undetermined: Sellow s.n. ["varietas"; Macbride photos 17600] (B--type, F--663029--photo of type, K--photo of type, Kr--photo of type, N--isotype, N--photo of type, N--photo of type, N--photo of type, P--isotype, S--photo of type,

Z—photo of type).

CITHAREXYLUM SPATHULATUM Moldenke & Lundell ex Lundell, Contrib. Univ. Mich. Herb. 8: 82—83. 1942.

Synonymy: Citharexylum brachyanthum var. glabrum C. L. Hitchc. & Moldenke ex Moldenke in Fedde, Repert. 37: 218. 1934. Citharexylum brachyanthum var. glabrum C. L. Hitchc. ex Moldenke, Prelim. Alph. List Invalid Names 16, in syn. 1940. Lycium chateauli Standl. ex Moldenke, Suppl. List Invalid Names 6, in syn. 1941.

Literature: Moldenke in Fedde, Repert. 37: 218. 1934; Moldenke, Geogr. Distrib. Avicenn. 4. 1939; Moldenke, Prelim. Alph. List Invalid Names 16. 1940; Moldenke, Suppl. List Invalid Names 6. 1941; Moldenke in Lundell, Fl. Texas 3 (1): 75. 1942; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 12 & 88. 1942; Moldenke, Alph. List Invalid Names 14 & 33. 1942; Lundell, Contrib. Univ. Mich. Herb. 8: 82—83. 1942; Moldenke, Known Geogr. Distrib. Verbenac. Suppl. 1: 2—4. 1943; Moldenke, Phytologia 2: 124—125. 1944; Moldenke, Alph. List Cit. 1: 100 & 321. 1946; Moldenke, Alph. List Invalid Names Suppl. 1: 5. 1947; H. N. & A. L. Moldenke, Pl. Life 2: 53. 1948; Moldenke, Alph. List Cit. 2: 351 (1948) and 3: 681, 683, & 707. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 22 & 179. 1949; Salisb., Ind. Kew. Suppl. 11: 55. 1953; Moldenke, Résumé 27, 255, 319, & 447. 1959.

Slender shrub, to 1.8 m. tall, diffusely branched; stems to 12 mm. in diameter; branches long, slender, flexible, glabrous; branchlets slender, glabrous; twigs tetragonal or subterete, usually sharp-pointed, essentially glabrous, the youngest ones short-hirtellous at the nodes; leaf-scars small, short-stalked; leaves opposite on young shoots, clustered on short spur-like branchlets on older wood; petioles absent; leaf-blades green, chartaceous, spatulate, usually 0.8—2.5 cm. long, sometimes shorter, 2.5—5 mm. wide, usually rounded at the apex, sometimes shallowly emarginate to acutish or apiculate, entire, attenuate and very slender at the base, entirely glabrous or with a few short stiff hairs at the apex; midrib discernible but inconspicuous; veinlet reticulation not evident; flowers fragrant, usually 1 or rarely 2 terminating the very short spur-like branchlets; pedicels very short, densely white-hirtellous; calyx campanulate, about 3.5 mm. long, contracted at the base into a stipe about 0.5 mm. long, usually 5- or rarely 4-ribbed, sparsely short-appressed-hirtellous, the rim with 5 thick reflexed teeth, truncate or toothed between the primary teeth, ciliolate; corolla white, about 6 mm. long, sparsely hairy, the tube about 3.5 mm. long, densely barbate in the throat and upper half, the lobes ovate, rounded at the apex, ciliate; stamens 4, included; filaments hairy; staminode rudimentary, hairy; style 1 mm. long, stipitate-glandular on the basal half; ovary glabrous; fruit orange-red, globose, 6—7 mm. wide.

The type of this species was collected by Cyrus Longworth Lundell and Amelia A. Lundell (no. 9953) on sand in open scrub, 11 miles north of Mission, Hidalgo County, Texas, on April 4,

1941, and is deposited in the herbarium of the University of Michigan. The type of C. brachyanthum var. glabrum was collected by Emile Chateau at Mission, Hidalgo County, Texas, in April, 1929, and is deposited in the herbarium of the Chicago Natural History Museum. The type sheet of the latter was annotated "Citharexylum brachyanthum (Hemsl.) A. Gray var. glabrum n. var." by C. L. Hitchcock, but, as far as I am able to determine, this trinomial was never formally published by him.

At first I agreed with Hitchcock in regarding this plant as a mere variety of C. brachyanthum (A. Gray) A. Gray, differing in its glabrous leaves and twigs and geographic distribution. Lundell has pointed out, however, that flowering material shows that it had better be regarded as a distinct species. "The glabrous longer leaves, glabrous branchlets, and differences in the flowers," he says, "indicate that a distinct species is represented. In C. spathulatum the calyx-rim bears 5 thick reflexed teeth terminating the ribs of the tube; between these primary teeth, the margin is truncate or shallowly toothed. The calyx rim is suggestive of the genus Lycianthes in the Solanaceae. In C. brachyanthum the calyx has 5 conspicuous teeth with well-developed sinuses between each. Further, the flowering calyx of C. brachyanthum is somewhat smaller, the ribs are less evident, and the pubescence is dense. The corolla of C. brachyanthum is a third smaller. The interpretation of the flowers of C. brachyanthum is based upon Forrest Shreve 8421 from Coahuila, Mexico."

Herbarium material of this species has been misidentified in the Chicago Natural History Museum as Lycium barbinodum Miers. The species appears to have a very limited distribution: the known material having come from (1) Mission, (2) 11 miles north of Mission, (3) 14 miles north of Mission, (4) Moore Field north of Mission, (5) Sullivan City, and (6) off United States Highway 83 midway between Rio Grande City and Sullivan City, Texas.

The Schott s.n. from Eagle Pass, Texas, in the herbarium at Chicago, determined as C. brachyanthum var. glabrum by Hitchcock, is actually Lycium berlandieri Dunal.

Our plant has been collected in scrub, on gravel hills, and in brush on sandy plains, flowering in April, in fruit in November. In all, 10 herbarium specimens, including the types of all the names involved, and 10 mounted photographs have been examined.

Citations: TEXAS: Hidalgo Co.: Chateau s.n. [Mission, June 1929] (B--photo, F--588018, F--589084, F--589181, K--photo, N--photo, N--photo, S--photo, Z--photo); Lundell & Lundell 9953 (F--photo of isotype, Ld--isotype, Mi--type, N--photo of isotype, Si--photo of type, Z--photo of type), 12689 (N, Si), 12774 (N). Starr Co.: Lundell & Lundell 12676 (N); Marsh 44 (F--1028435).

CITHAREXYLUM SPINOSUM L., Sp. Pl., ed. 1, 2: 625. 1753.

Synonymy: Citharexylon americanum alterum, foliis ad marginem

dentatis Pluk., Almag. Bot. 108, fig. 5. 1696. Citharexylum americanum Mill., Gard. Dict., ed. 6, app. 1752. Cytharexylum quadrangulare Jacq., Enum. Syst. Pl. Carib. 26. 1760. Cytharexylum teres Jacq., Enum. Syst. Pl. Carib. 26. 1760. Citharexylum teres Jacq., Seçect. Stirp. Amer. Hist. 185, pl. 118. 1763. Citharexylum quadrangulare Jacq. ex Murr. in L., Syst. Veg., ed. 13, 472. 1774. Citharexylum quadrangulare Jacq., Select. Stirp. Amer. Hist. Picta 91. 1780 [not C. quadrangulare Hort. Madrit., 1806, nor Sessé & Moc., 1894, nor Millsp., 1907, nor Boutelou, 1909, nor Griseb., 1909, nor A. Rich., 1909]. Citharexylum quadrangulare L. apud Lam., Encycl. Méth. Bot. 2: 133, in syn. 1786. Citharexylum teres Jacq. ex Sw., Obs. Bot. 234, in syn. 1791. Citharexylum quadrangulare Willd. apud Pers., Syn. Pl. 2: 142. 1806. Citharexylum caudatum Sw. apud Steud., Nom. Bot., ed. 1, 202, in syn. 1821 [not C. caudatum L., 1763, nor Citharexylum caudatum L., 1774, nor Seem., 1861, nor Sieb., 1896, nor Donn. Sm., 1907, nor Sagra, 1909, nor Cham. & Schlecht., 1940]. Citharexylum cinereum var.  $\rho$  Lam. apud Steud., Nom. Bot., ed. 1, 202, 1821. Citharexylum quadrangulare Jacq. ex Richter, Linn. Op. 603. 1835. Citharexylum spinosum L. ex Richter, Linn. Op. 603. 1835 [not C. spinosum Kunth, 1825, nor H. & B., 1840, nor H.B.K., 1845, nor Citharexylum spinosum H.B.K., 1817, nor Kunth, 1847]. Citharexylum caudatum Sw. apud Schau. in A. DC., Prodr. 11: 611, in syn. 1847. Citharexylum cinereum var.  $\rho$  Lam. apud Schau. in A. DC., Prodr. 11: 611, in syn. 1847. Citharexylum surrectum Griseb. (in part), Fl. Brit. W. I. 497. 1861. Citharexylum laevigatum Hostm. ex Griseb., Fl. Brit. W. I. 497, in syn. 1864. Citharexylum quadrangulare Schau. apud Griseb., Fl. Brit. W. I. 497, in syn. 1864. Citharexylum cinereum Jacq. apud O. E. Schulz in Urb., Symb. Antil. 6: 65, in syn. 1909 [not C. cinereum L., 1763, nor Sessé & Moc., 1831, nor Spreng., 1893, nor Donn. Sm., 1907, nor Citharexylum cinereum L., 1851, nor Spreng., 1851]. Citharexylum lucidum Griseb. (in part) apud O. E. Schulz in Urb., Symb. Antil. 6: 65, in syn. 1909 [not C. lucidum Schlecht. & Cham., 1830, nor D. Don, 1831, nor Cham., 1861, nor C. DC., 1942]. Citharexylum quadrangulare Hort. ex Gerth van Wijk, Dict. Plantnames 321. 1911. Citharexylum quadrangularis Jacq. ex Roig, Est. Exp. Agron. Santiago Vegas Bol. 54: 558. 1928. Citharexylum quadriloculare Jacq. ex Moldenke, Prelim. Alph. List Invalid Names 15, in syn. 1940. Citharexylum caudatum var. obtusifolium Hornemann ex Moldenke, Prelim. Alph. List Invalid Names 16, in syn. 1940. Citharexylum hostmannii Klotzsch ex Moldenke, Prelim. Alph. List Invalid Names 16, in syn. 1940. Citharexylum quaternangulatum Warb. ex Moldenke, Prelim. Alph. List Invalid Names 17, in syn. 1940. Citharexylum subdentatum Hort. ex Moldenke, Prelim. Alph. List Invalid Names 17, in syn. 1940. Citharexylum



laevigatum Hostm. ex Moldenke, Alph. List Invalid Names 58, in syn. 1942. Citharexylum americanum alterum, etc. Pluk. ex Moldenke, Alph. List Invalid Names 58, in syn. 1942. Citharoxylon semiserratum Hort. ex Moldenke, Alph. List Invalid Names 58, in syn. 1942. Cytharexylon quadrangulare Jacq. ex Moldenke, Alph. List Invalid Names 58, in syn. 1942. Cytharexylon teres Jacq. ex Moldenke, Alph. List Invalid Names 58, in syn. 1942. Cithaexylum quadrangulare Jacq. apud Roig, Plant. Medic. 778, in syn. 1945. Cithaexylum spinosum L. apud Roig, Plant. Medic. 778. 1945. Cithaexylon quadrangulare Jacq. ex Moldenke, Alph. List Invalid Names Suppl. 1: 4, in syn. 1947. Cithaexylon spinosum L. ex Moldenke, Alph. List Invalid Names Suppl. 1: 4, in syn. 1947. Citharexylum spinosum L. ex Alain in León & Alain, Fl. Cuba 4: 300. 1957. Citharexylon quadrangulare var. sterilis Hort. ex Moldenke, Résumé 254, in syn. 1959. Citharexylum hostmanni Vil. ex Moldenke, Résumé 256, in syn. 1959. Citharexylum quadrangulatum Jacq. ex Moldenke, Résumé 258, in syn. 1959.

Literature: Pluk., Almag. Bot. 108, fig. 5. 1696; L., Amoen. Acad. 1: 406. 1749; Mill., Gard. Dict., ed. 6, app. 1752; L., Sp. Pl., ed. 1, 2: 625. 1753; Jacq., Enum. Syst. Pl. Carib. 26 [ed. Lugd.] (1760) and [ed. Novimb.]. 1762; L., Sp. Pl., ed. 2, 872. 1763; Jacq., Select. Stirp. Amer. Hist. 185--186, pl. 118. 1763; Mill., Gard. Dict., ed. 8, no. 1. 1768; Jacq., Hort. Vindob. 1: pl. 22. 1770; Murr. in L., Syst. Veg., ed. 13, 472. 1774; Jacq., Select. Stirp. Amer. Hist. Picta 90--91, pl. 178. 1780; Murr. in L., Syst. Veg., ed. 14, 564. 1784; Lam., Encycl. Méth. Bot. 2: 133. 1786; Jacq., Amer. Gew. 2: 44, pl. 197. 1787; Sw., Obs. Bot. 234. 1791; H. West, Bidr. Besk. Ste. Croix 294. 1793; Gmel. in L., Syst. Nat., ed. 13, 2 (2): 943. 1796; Lam., Tabl. Encycl. Méth. 3: pl. 545. 1797; Willd., Sp. Pl. 3: 308--309. 1801; Desf., Tabl. Ecol. Bot., ed. 1, 54. 1804; Pers., Syn. Pl. 2: 142. 1806; Cels, Cat. Arbres 11. 1817; Poir. in Lam., Dict. Sci. Nat. 9: 286. 1817; Steud., Nom. Bot., ed. 1, 202. 1821; Spreng. in L., Syst. Veg., ed. 16, 2: 763--764. 1825; Wikstr., St. Barthél. 422. 1826; Wikstr., Kgl. Vetensk. Akad. Handl. 1827: 69. 1827; Desf., Cat. Pl. Hort. Reg. Paris, ed. 3, 91. 1829; Cham. & Schlecht., Linnaea 5: 97. 1830; Maycock, Fl. Barb. 245. 1830; Richter, Linn. Op. 603. 1835; Steud., Nom. Bot., ed. 2, 1: 375. 1840; Walp., Repert. 4: 75--77. 1845; Schau. in A. DC., Prodr. 11: 611. 1847; Schau. in Mart., Fl. Bras. 9: 267. 1851; Griseb., Syst. Untersuch. Veg. Kar. 108. 1857; Griseb., Abhand. König. Gesell. Wissen. Götting. 7: 256. 1857; Griseb., Fl. Brit. West Ind. 497. 1861; Eggers, Vidensk. Meddel. Naturhist. Kjøben. 1876: 139. 1876; Eggers, U. S. Nat. Mus. Bull. 13: 83. 1879; Reade, Pl. Bermudas 62. 1883; Fawcett, Econom. Pl. 29. 1891; Mazé, Contrib. Fl. Guadel. 108. 1892; Kew Bull. 81: 269. 1893; Jacks., Ind. Kew. 1: 549--550. 1893; Fawcett, Prov. List Indig. Nat. Fl. Pl. Jamaic. 29. 1893; Briq. in Engl. & Prantl, Nat. Pflanzenfam. 4 (3a): 159. 1894; Lubbock, Journ. Linn. Soc. Lond. Bot. 33: 231. 1897; Duss, Fl. Phan. Ant. Franç. 465. 1897; Contrib. U. S. Nat.

Herb. 8: pl. 27. 1903; Pulle, Enum. Pl. Surin. 403. 1906; Avebury, Buds & Stipules 76. 1908; O. E. Schulz in Urb., Symb. Antil. 6: 64--65. 1909; Gerth van Wijk, Dict. Plantnames 321. 1911; Glaz., Bull. Soc. Bot. France Mém. 3: 546. 1911; H. B. Small, Bot. Bermudas 48. 1913; H. Hallier, Meded. Rijks Herb. Leiden 37: 22. 1918; Britton, Fl. Bermuda 316. 1918; L. H. Bailey, Man. Cult. Pl., pr. 1, 631 & 807 (1924) and pr. 2, 631 & 807. 1925; Britton & P. Wils., Scient. Surv. Porto Rico 6: 146. 1925; Setchell, Univ. Calif. Publ. Bot. 12: 205. 1926; R. O. Williams, Guide Roy. Bot. Gard. Trin. 30. 1927; Freeman & Williams, Useful Pl. Trin. 39. 1928; Roig, Est. Exp. Agron. Santiago Vegas Bol. 54: 558 & 793. 1928; Seymour, Host Ind. Fungi N. Am. 588--589. 1929; Stapf, Ind. Lond. 2: 220. 1930; Zuill, Trees & Pl. Bermudas [16]--17. 1931; Marshall, Trees Trin. & Tob. 76. 1934; Crevost & Pételot, Bull. Econom. Indo-chine 37: 1289--1290. 1934; Burkill, Dict. Econom. Prod. Malay Penins. 1: 559--560. 1935; L. H. & E. Z. Bailey, Hortus 152. 1935; L. H. Bailey, Man. Cult. Pl., pr. 3, 631 & 807. 1938; Moldenke, Annot. List 108. 1939; Moldenke, Alph. List Common Names 3, 5, 6, 9, 10, 12, 14, 17, 24, 27, & 33. 1939; Moldenke, Geogr. Distrib. Avicenn. 4--7, 9--12, 20--22, & 36. 1939; Moldenke in Pulle, Fl. Surin. 4 (2): 292 & 294--296. 1940; Moldenke, Suppl. List Common Names 4, 7, & 21. 1940; Moldenke, Prelim. Alph. List Invalid Names 15--18. 1940; L. H. Bailey, Man. Cult. Pl., pr. 4, 631 & 807. 1941; Worsdell, Ind. Lond. Suppl. 1: 233. 1941; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 24--30, 32, 33, 55, 71, & 88. 1942; Moldenke, Alph. List Invalid Names 13--15 & 58. 1942; Moldenke, Phytologia 2: 97. 1944; Moldenke, Bot. Gaz. 102: 162. 1944; L. H. Bailey, Man. Cult. Pl., pr. 5, 631 & 807. 1944; Roig, Plant. Medic. 778. 1945; Augusto, Fl. Rio Grande do Sul 236. 1946; Benthall, Trees Calcutta 357--358. 1946; J. S. Beard, Carib. Forester 7: 38. 1946; Moldenke, Alph. List Cit. 1: 7, 9, 10, 23, 27, 30, 36, 37, 40, 48, 49, 52, 54, 59, 64, 67--70, 72, 78, 82, 99, 103, 108, 109, 113, 114, 116--119, 122, 131, 154, 155, 167, 172--174, 180, 182, 198, 201, 205, 208, 216, 217, 220, 234, 242, 243, 246, 248, 252--254, 258, 260, 261, 268, 271, 272, 274, 276, 277, 283, 286, 300, 301, 308, 310, 314, & 316. 1946; Moldenke, Alph. List Invalid Names Suppl. 1: 4, 5, & 8. 1947; Moldenke, Phytologia 2: 334 (1947) and 479. 1948; Van Rensselaer, Trees Santa Barbara, rev. ed., 163. 1948; Moldenke, Castanea 13: 121. 1948; Moldenke, Alph. List Cit. 2: 332, 333, 352, 359, 361, 401--403, 407--409, 412, 419, 420, 427, 431, 433, 434, 437, 439, 443, 447, 448, 459, 464, 481, 484, 487, 489, 490, 495--497, 500--502, 504, 507, 519, 520, 528, 550, 560--562, 564--567, 576, 577, 581, 582, 600, 602, 605, 610, 615, 619--621, 630, 635, 640, & 644. 1948; H. N. & A. L. Moldenke, Pl. Life 2: 65. 1948; Moldenke, Alph. List Cit. 3: 684, 702, 706, 707, 721, 724, 725, 738, 743, 747, 748, 767, 770, 771, 774, 775, 782, 783, 794, 809, 810, 813, 822, 826, 828, 839, 849, 853, 854, 856, 858, 866, 869, 894, 926, 934, 936, 938, 949, 954, 965, & 976 (1949) and 4: 981--983, 986, 1006, 1007, 1009, 1012, 1020, 1030, 1036, 1039, 1044, 1060, 1079, 1093, 1105, 1114, 1115, 1117, 1133, 1135, 1136, 1146, 1147, 1211, 1232, & 1239. 1949; Moldenke, Phytologia

3: 140. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 41, 43, 46, 47, 49, 51--57, 62, 67, 68, 114, 128, 158, & 179. 1949; H. N. & A. L. Moldenke, Anal. Inst. Biol. Mex. 20: 4. 1949; Roig, Dicc. Bot. 2: 1003. 1953; Moldenke, Journ. Calif. Hort. Soc. 15: 85. 1954; Moldenke in Cheesman, Fl. Trin. & Tob. 2 (6): 22--23. 1955; Alain in León & Alain, Fl. Cuba 4: 299--301. 1957; Moldenke in Steyermark, Fieldiana 28: 1083. 1957; St. John, Common Trees Univ. Hawaii n.p. 1957; Moldenke, Résumé 49, 51, 55, 56, 58--64, 70, 76, 78, 129, 140, 165, 203, 215, 252--259, 277, & 447. 1959; Box, Fl. Antigua, mss.

Illustrations: Pluk., Almag. Bot. 108, fig. 5. 1696; Jacq., Select. Stirp. Amer. Hist. pl. 118. 1763; Jacq., Hort. Vindob. 1: pl. 22 [colored]. 1770; Jacq., Amer. Gew. 2: pl. 197. 1787; Britton, Fl. Bermuda 316. 1918; Zuill, Trees & Pl. Bermudas [16]. 1931; Crevost & Pételot, Bull. Econom. Indo-chine 37: 1290. 1934; Benthall, Trees Calcutta 358. 1946.

Shrub or tree, to 16 m. tall; trunk to 35 cm. in diameter; crown narrow; wood pithy, brittle; branches and branchlets medium-slender, usually acutely tetragonal, gray or stramineous, glabrous; twigs slender, stramineous or brown, glabrate; nodes very obscurely annulate; principal internodes 1--4 cm. long; leaf-scars borne on large, ascending, corky sterigmata to 4 mm. long; leaves decussate-opposite, sometimes only one of a pair developed or one greatly reduced; petioles slender, 0.7--2.4 cm. long, orange when fresh, mostly canaliculate above, glabrous; leaf-blades membranous or chartaceous, sometimes firm, usually rather dull, rich-green above and pale-green beneath or uniform in color on both surfaces, often more or less brunneous in drying, elliptic or elliptic-oblong to oblong, rarely subovate, 3.5--29 cm. long, 1.3--11.3 cm. wide, mostly large, varying from obtuse (rarely emarginate) or acute to short-acuminate at the apex, entire (or rarely irregularly and coarsely dentate with large teeth on water-sprouts), acute or subacuminate at the base and usually bearing one or two black glands of varying dimensions there, glabrous on both surfaces or sparsely barbellate along the sides of the midrib and in the axils of the secondaries beneath; midrib slender, prominent beneath; secondaries slender, 5--8 pairs, arcuate-ascending, plane or very slightly prominent above, prominent beneath; vein and veinlet reticulation rather distant, mostly obscure on both surfaces or only slightly prominent beneath; racemes axillary and terminal, mostly terminal, simple or compound with 1--5 pairs of basal branches, 2.5--35 cm. long, to 2 cm. wide during anthesis, rather loosely many-flowered, nutant; peduncles and the pale-green rachis slender, very sparsely and minutely pulverulent or glabrous, the former brown, 1.5--2.5 cm. long, usually with one bractlet-bearing node near the middle; pedicels very slender, 1.5--4 mm. long, glabrate; bracts usually absent, but when present large and foliaceous; bractlets linear, to 1 cm. long, glabrate; prophylla linear, 1--2 mm. long, glabrate; flowers very fragrant, with the odor of cherry-laurel (Laurocerasus officinalis Roem.) or heliotrope (Heliotropium peruvianum L.); calyx cyathiform, 3--4 mm. long,

pale-green, glabrous, its rim ciliate and obsoletely 5-dentate; corolla varying from white or whitish to cream-colored or reddish-white, subhypocrateriform or hypocrateriform to infundibular, its tube 4--6 mm. long, externally glabrous, white-villous at the mouth within, its limb 5-parted, the lobes suborbicular-lingulate, 2--3 mm. long, rounded at the apex, sparsely ciliate; filaments white; anthers brown; style green; stigma dark-green; ovary 4-celled, each cell with one locule; ovules axile just above the base of the locule; fruiting-calyx indurated, cupuliform or broadly cupuliform, 3--4 mm. long, 5--6 mm. wide, orange when fresh, often venose, glabrous, shiny, its rim irregularly erose or shallowly and irregularly lobed and more or less scarious; fruit drupaceous, oblong, about 8 mm. long and 6 mm. wide, very fleshy, brown-black or black to reddish-black when fresh, shiny and very much wrinkled in drying, often apiculate when immature.

The type of Plukenet's Citharexylon americanum alterum, on which Linnaeus later based his Citharexylum spinosum -- and the genus Citharexylum as well -- was collected by James Reed (or "Reid") in the Barbados islands before 1700 (the name is given in the ablativus as "Jacobus Reede" in Plukenet's Almagest. 108. 1696; cfr. Britten & Boulger, British & Irish Botanists, and Urb., Symb. Antil. 3: 110. 1902). It is deposited in the herbarium of the British Museum in London and has been examined but not annotated by me. C. surrectum was based by Grisebach on apparently unnumbered specimens collected by McNab and by Marsh at Port Royal, Jamaica, and by Wullschlägel in Antigua.

The "Index Kewensis" erroneously accredits C. teres Jacq. to page "46" instead of 26 in his Enum. Syst. Pl. Carib. (1760).

The species is very widely distributed in the West Indies and northern South America, and is very widely cultivated, and sometimes naturalized, in other portions of the world. It has been collected in dense thickets, pastures, limestone sinks, wooded guts, native yards, and woods, along tree-bordered walks, creeks, roadsides, and streamsides, and on hillsides, plantations, shores, rocky wooded slopes, sand dunes, and xerophytic hillsides near the sea, at altitudes from sea-level to 500 meters. It has been collected in anthesis from April to February, inclusive, and in fruit from January to March and in August. Its wood is used commercially in Cuba, while Fawcett, in the 1891 reference listed above, quotes Harrison to the effect that it is "a most useful timber in building, close grained and very tough, used for mill rollers and frames, carriage wheels, &c."

Röndle comments that the species is common on hillsides in Bermuda, but is not native there, having been introduced. He says that it starts growing beneath the junipers, killing the juniper branches as it grows. It is, however, very brittle, and is destroyed by the hurricanes that hit the islands, which do not harm the junipers. Rankin gives us the information that it was introduced into the Bermuda islands "circa 1830". Egler reports that on Martinique it is found in Coccoloba forests, in the arid zone, elsewhere occasional along roadsides, and also in the lower part



of the humid zone. Duss reports it to be a tree of medium height, rarely of great height, with divergent branches, soon pendent. Robinson says that from his observation it is "commonly planted along walls, etc., and rarely tending to spread to roadsides" in Bermuda. Zuill says "Twice a year, in the spring and again in the autumn, the colour of the leaves turns from green to russet gold and adds brilliancy and variety to the landscape."

Benthall says that "In the tree's native country it is made into stringed musical instruments", and notes that in Calcutta "the flowers appear at the beginning of the rains. In shape and manner of growth they are reminiscent of the closely allied genus Duranta." Rendle and other authors have expressed doubt about this popular conception concerning the derivation of the scientific name of the genus and its common name of "fiddlewood". Miller, in his Gard. Dict., ed. 8, says that the names come from the French "bois fidele", which has nothing whatever to do with fiddles, and that the wood is not used at all for making any sort of musical instruments. Dr. Britton agrees with this explanation.

The species is very closely related to C. fruticosum L., but can usually be distinguished by its larger, broader, membranous or chartaceous, and less conspicuously veined mature leaf-blades. Sometimes there is a large terminal panicle produced, with 5 or 4 pairs of opposite branches, subtended by rather large bracts or bractlets, e.g., Brown & Britton 342 in the Gray Herbarium and at Philadelphia. On Boldingh 2385b the leaves are large, with prominent venation on both surfaces and heavy in texture, as in C. fruticosum, but the specimen seems to be from a sterile sucker. Killip & Lasser 37784 has very large, broad, and thin leaf-blades, and may also be from a root-sucker as I suggested on my supplementary annotation label. The Belgian Congo specimens cited below, both the cultivated and the naturalized ones, all have the leaf-blades rather small and stiff, with quite prominent venation, and thus resemble C. fruticosum.

The Bailey, Bailey, Whetzel, Degener, & McCallan s.n. of July 4, 1921, and the Herb. Singapore Bot. Gard. s.n., both cited below, have ternate leaves and racemes and have the corollas very densely pubescent, the calyx-rim subtruncate, and the pedicels elongate. However, the leaves on the young short twigs from the axils of the large leaves are opposite in normal fashion. The Dancer s.n. collection from Jamaica has the fruiting-pedicels long, stiff, and spine-like after the fruit and fruiting-calyx have dropped off. R. Moran 2644 has the leaves rather hairy along the entire venation beneath. The cultivated Herb. Burman specimen has deeply dentate leaves (as called for in the original description of the species). The two Klingen collections from India have remarkably small leaf-blades for this species, and have much the aspect of C. schottii Greem. Roig 306 has much the aspect of C. caudatum L., but is certainly conspecific with Jenman 82 in the Kew herbarium, which is labeled "C. surrectum Griseb."

A specimen collected by Head in the Liverpool Botanic Garden

and deposited in the Torrey Herbarium, identified as C. quadrangulare, is actually a species of Viburnum in the Caprifoliaceae.

Material of C. spinosum has been misidentified in Indochina as Duranta stenostachya Tod., while Clemens & Clemens 3755 has even been confused with the genera Polyosma Blume of the Escalloniaceae and Lysimachia L. of the Primulaceae! Herbarium material has been misidentified as C. album Mill., C. caudatum L., C. cinereum L., C. coriaceum Desf., C. fruticosum L., C. subserratum Sw., Callicarpa americana L., Duranta plumieri Jacq., Clethra arborea Ait., Putranjiva roxburghii Wall., Sideroxylon album Hort., S. cinereum Lam., and Berberis sp.

Citharexylum coriaceum Desf. is said by some authors to be conspecific with C. spinosum, but in my opinion actually belongs in the synonymy of C. fruticosum. Similarly, C. cinereum Sessé & Moc. is reduced to C. spinosum by some writers, but I have examined the type and it is definitely C. fruticosum. Sprengel, Steudel, Walpers, Schauer, and Augusto all reduce C. teres to synonymy under C. cinereum L., which is incorrect since Linnaeus' name plainly refers to what we now call C. fruticosum. The Citharexylum fruticosum cortice cinereo etc. P. Browne and the Citharexylon arbor laurifolia Pluk. which Walpers cites in his synonymy actually belong under C. fruticosum, while the Jasminum arborescens racemosum etc. Plum., which he also cites, belongs under C. caudatum.

The Glaziou 9989 cited as C. quadrangulare by Glaziou in the reference listed above is actually C. myrianthum Cham., while the no. 11328 also cited by him as C. quadrangulare is C. glaziovii Moldenke.

Box, in his manuscript "Flora of Antigua", reduces C. fruticosum L., C. subserratum Sw., and C. quadrangulare Griseb. to synonymy under C. spinosum L. He cites Tate s.n. in the Sloane Herbarium, vol. 193, fol. 29, at the British Museum, from Antigua, and states that he and Charter "noted" the species also on Barbuda island in May, 1937. He states that on Antigua the species is found in xerophytic woods, especially in the coastal areas, occasional to frequent locally.

Robinson, in a note written on a herbarium specimen, states that he is "very doubtful" if C. quadrangulare really is conspecific with C. spinosum. The Citharexylum cinereum L. sensu Pulle, Enum. Pl. Surin. 403 (1906) is certainly C. spinosum. The illustrations published as C. quadrangulare in Lubbock, Journ. Linn. Soc. Lond. Bot. 33: 231 (1897), Contrib. U. S. Nat. Herb. 8: pl. 27 (1903), and Avebury, Buds & Stipules 76 (1908), on the other hand, are actually C. fruticosum! Persoon, in his Syn. Pl. 2: 142 (1806), cited "Willd., p. 359", but this seems to refer to Willd., Sp. Pl. 3: 308--309 (1801).

Broadway 955, 4064, and 6658, Eggers 5484, and Smith & Smith 405 seem to represent a natural hybrid with C. fruticosum, discussed in these notes under xC. hybridum Moldenke. Otero 681 has the upper leaves thin and the lower ones subcoriaceous, and looks like this same hybrid. Perkins 1320 is certainly a hybrid with C. caudatum, herein treated under xC. perkinsi Moldenke. It is very possible that some or all of the anomalous specimens mentioned in previous paragraphs may also represent one or the other of these hybrids.

The Herb. Hort. Audibert material and the two Collector undesignated s.n. specimens, all cultivated in France, cited below, have very chartaceous young leaves, small in size, and villous along the midrib and larger venation beneath. The Herb. DeCandolle 930 is intermediate between them and the normal form of the species. It is probable that all came from a tree cultivated in the Trianon gardens.

Moldenke 8382 was taken from a plant said to be New York Botanical Garden Cultivated Plants 13449, but is plainly C. spinosum, while the herbarium specimen of that garden record number preserved in the Cultivated Herbarium at the New York Botanical Garden is apparently C. fruticosum. It may be that the plant from which Moldenke 8382 was taken was actually a plant belonging to the New York Botanical Garden Cultivated Plants 43651 lot, which is C. spinosum. Gardeners may have erroneously transferred the labels in the greenhouse, or accidentally mixed some of the seeds. Hartley s.n., also supposedly representing no. 13449, is herein cited as C. spinosum, but is anomalous -- some of its leaves are firm-textured, with raised venation, and dentate. It is also possible that some or all of these puzzling anomalies may have been brought about by the abnormal conditions of indoor greenhouse cultivation.

The "Duranta stenostachya Tod.?" reported by Setchell in Univ. Calif. Publ. Bot. 12: 205 (1926) as cultivated in the Experimental Garden at Papeete and "originally from Brazil; large tree", is C. spinosum. Indo-chinese specimens labeled as Duranta stenostachya have also proved to be C. spinosum. Setchell annotated his specimen as "Duranta or a 1-foliolate Vitex". C. spinosum is not known from Brazil, although cited from there by Pulle in error.

Anstead says that C. spinosum is "a common tree under cultivation in South India. Flowers white and very fragrant. Needs a lot of water." Burchard says that it is a "very rare tree in shady places opposite La Orotava" on Tenerife in the Canary Islands. He does not indicate that it is cultivated there, so I assume that it has become naturalized.

I have personally observed a plant of this species cultivated in the Temperate House at the Royal Botanic Gardens at Kew, wrongly labeled there as C. barbinode Cham.

The bark and wood are often attacked by the fungus Polyporus marasmioides (Pat.) Sacc. & D. Sacc. [Melanopus marasmioides Pat.] and the leaves by Gloeosporium cytharexylis Scalia. Vernacular names recorded are "arbol de Santa Maria", "aschgrauer Geigenholzbaum", "bois carré", "bois cotelet", "bois côtelet", "bois cotelet carré", "bois côtelette", "bois de cotelette", "bois de fer blanc", "bois de guitare", "bois fidele", "bois fidèle", "bois guitare", "bois guitarin", "cautauro", "cautauro nhô", "côtelette", "cutlet", "fairy", "fiddle wood", "fiddlewood", "fiddle-wood", "fig bush", "Geigenholz", "guayo blanco", "higuerillo", "juniper-berry", "penda", "savannah wattle", "susanna", "susanna tree", "vedelhout", "white fiddle-wood", and "zither-wood". Of these names, however, "Geigenholz", "fiddle-wood", "susanna", and "zither-wood" are applied also to the genus as a whole; "juniper-berry" and "white fiddle-wood" are applied also to C. caudatum; "cutlet" to C. fruticosum and its varieties brittonii and villosum; "guayo blanco" to C. fruticosum and to C. tristachyum Turcz.; "penda" to C. caudatum, C. fruticosum and its varieties subvillosum and villosum, and Cornutia pyramidata L.; "fiddle-wood" to C. caudatum, C. fruticosum, and Petitia domingensis Jacq.; "fiddlewood" to C. fruticosum var. brittonii and var. villosum, Cornutia pyramidata, Petitia domingensis, Vitex gaumeri Greerm., and V. umbrosa Sw.; and "higuerillo" to C. caudatum and Vitex divaricata Sw.

The finest collection of herbarium material of this species is seen in the Naturhistorisches Museum at Vienna. In all, 547 herbarium specimens, including the types of all the names involved, and 10 mounted photographs and paintings have been examined.

Citations: BERMUDA: Bailey, Bailey, Whetzel, Degener, & Mc Callan s.n. [Experiment Station, June 30, 1921] (A, N), s.n. [July 4, 1921] (Ba), s.n. [Sept. 10, 1921] (Y); S. Brown 597 (D--534797, F--244251, G, N, W--848410); Brown & Britton 342 (A, Ca--370291, D--511443, Es, F--203871, G, K, N, Up--45690, W--524922), 1075 (D--556541, N); F. S. Collins 258, in part (P), 259 (B, Cm, F--464807, G, K, L, N, N--photo, V--6799, W--717554, Z--photo); Degener s.n. [September 10, 1921] (It); T. J. Harris 16 (K); Harshberger s.n. [6/16/05] (Up--39532), s.n. [Limestone sinks, Walsingham] (D--532179, E--119084, G, W--847511); C. F. Millspaugh 122 (F--60122); A. H. Moore 3085 (G), 3131 (G, Gg--155401, Mi), 3132 (G, Gg--155402); Rendle 553 (Bm, Bm); B. L. Robinson 28 (G); Setchell & Setchell s.n. [June 3, 1921] (Ca--213491). CUBA: Camagüey: Roig, Luaces, & Arango s.n. [Herb. Roig 8186] (Es). JAMAICA: R. C. Alexander s.n. [Moneague] (K); Dancer s.n. (Cb); Howard & Proctor 13748 (N), 14026 (N); Jenman 82 (K); March 1003 (K), 1046 (K), s.n. (B); Swartz s.n. (S, S); N. Wilson s.n. (K); Wullschlägel 425 (Mu--759, V--88189), 426 (Mu--748, V--88190), 1287 (Mu--1094, V--88225). HISPANIOLA: Dominican Republic: Char-don 438, host (It); Fuertes 88, in part (F--385105, S). PUERTO



RICO: Otero 681 (Bt--52551, N); Sintenis 6928 (B). CABRAS ISLAND: Otero 92 (N). VIRGIN ISLANDS: St. Croix: Benzon 1 (S); Britton & Cowell 60 (B, N); Collector undesignated s.n. [St. Croix] (Dc); A. E. Ricksecker 424 (B, Ca--473016, Du--210263, E--119088, F--70831, Ob--14856, Ol, P), 424 bis (F--70831); West s.n. (L). St. John: Benzon s.n. [1820] (Cp). LEEWARD ISLANDS: Antigua: Box 1176 (N); Wullschlägel s.n. (Mu--760). Dominica: Finlay s.n. [Prince Rupert's Head, June 1792] (K); Hodge 871 (N), 872 [August 27-31, 1938] (N); Hodge & Hodge 1505 (Ms); Imray 100 (G, K), 376 (L); Kraus 119 (Ed); Nicholls 15 (B), 31 (B, Le, S). Guadeloupe: André 7 (K); Duchassaing s.n. (B); Duss 307 (P), 2944 (B, F--202763, N, W--849946); Grèbert 26 (P); Perrottet 138 (P), 278 (Cb, Cb), s.n. [18 juin 1824] (Dc), s.n. [1824] (Cb, Cb, Cb, Cb, Cb); Stehlé 164 (S), 265 (Mi, S), 407 (N), 427 (Mi, S), 1396 (N). Montserrat: Robeson 21 (K). Saba: Suringar s.n. [22 April '85] (Le). St. Eustache: Boldingh 53b (Ut), 271b (N, Ut, Ut), 641ab (Ut), 746b (Ut), 984ab (N, Ut), 1314b (Ut), 1527b (Ut), 2473ab (Ut); Collector undesignated s.n. (Le); Groll-Meyer 128 (Ut); Suringar s.n. [10 April '85] (Le), s.n. [16.IV.1885] (B, Le). St. Martin: Boldingh 2385b (Ut), 2818b (Ut); Collector undesignated 68 (Le); Rijgersmaa s.n. [1868] (S). WINDWARD ISLANDS: Barbados: Bovell s.n. [Herb. Bot. Stat. Barbados 229] (N); Gooding 228 (N); E. H. L. Krause 88 (B, B); A. E. S. McIntosh s.n. [May 1935] (Bb); J. Reed s.n. (Bm--type); Willich & Weiss 7118 (B). Bequia: Joseph B.43 (B), B.44 (C). Grenada: W. E. Broadway 3725 (B), s.n. [June 23, 1906] (Ed); Eggers 6285 (A, B, B, P, P). Martinique: André 1410 (K); Bélangier 196 (P, P), 258 (Cb); Duss 2026 (N, N, W--849749), 2026b (B), 2027 (B, B), 2027a (N, N, W--849750); Egler 39-190 (N); Forster s.n. (K); Hahn 603 (Mu--1374), 609 (B, Bm, Bm, Ca--453685, Cb, Cb, Cb, Cb, G, K, K, L, P, P, P, P, V, W--57328, X, X), s.n. (F--236896); Herb. Portenschlag s.n. (V); Herb. Reichenbach f. s.n. (V); Isert 87 (Cp); Plée s.n. (B, P); L. C. Richard s.n. (P); Sieber Fl. Mart. 156 (B, B, B, B, Br, E--119089, K, L, Le, Mu--758, P, V--285032, V--285052, V, V, X), Fl. Mixta 396 (L, L, L, L, L, Le, Lu, M). Mustique: Smith & Smith 140 (Bm, G). St. Lucia: Anderson s.n. [Belair, May 14, 1889] (K); P. Beard 1010 (S); Crudy s.n. (Mu--757); Herb. Schwägrichen s.n. (Mu--1377); Ponthieu s.n. (Bm); Ramage s.n. (B, Bm, K). St. Vincent: Eggers 6536 (B, B); E. H. L. Krause 11 (B), 12 (B), 13 (B); Morton 4669 (W--1883833, W--1883834), 5737 (W--1884585); Smith & Smith 66 (C), 1786 (Bm). TOBAGO: W. E. Broadway 3821 (B, Bm, Cb, Cb, Cb, Cb, Ed, F--376487, F--376488, G, N, S, Ut), 3831 (Cp); R. O. Williams s.n. [Herb. Trin. Bot. Gard. 11155] (K). TRINIDAD: Bailey & Bailey s.n. [Port-of-Spain, Feb. 11, 1921] (Ba); W. E. Broadway s.n. [Herb. Trin. Bot. Gard.

4508] (R, R); Fendler 597 (Ed, Ed, K, N--photo, Pa, W--57327, Z--photo); Hart 3836 (Cb, Le, S); Herb. Trin. Bot. Gard. 430 (R); Swabey s.n. [Herb. Trin. Bot. Gard. 12905] (R), s.n. [Herb. Trin. Bot. Gard. 12958] (R); R. O. Williams s.n. 11155] (R). CURACAO: Otto 892 (B). WEST INDIES: Island undesignated: Herb. Adanson s.n. (P, P, P, P, P); Herb. Boos s.n. (V); Herb. Braun s.n. (L); Herb. Fischer s.n. (L, L); Herb. Jacquin s.n. (Bm, Bm, V); Herb. Jewett s.n. (Mi); Herb. Liebmann s.n. (Cp, Cp); Herb. Montinu s.n. (S); Herb. Reichenbach f. s.n. (V--180809, V--285051); Herb. Schrader s.n. (L, L); Herb. Trattinek s.n. (V); Herb. Univ. Christian. s.n. (Ol); Herb. Vaillant s.n. (P, P); Krebs s.n. (Cp); Ponthieu s.n. [Ind. occid.] (Bm, Bm); Sieber s.n. [Herb. Sprengel] (B). VENEZUELA: Aragua: Killip & Lasser 37784 (W--1855741). Bolívar: Steiermark 60941 (N). Federal District: Vargas 91 (Dc, Dc). SURINAM: Berthoud-Coulon 566 (Bm); B. W. Forestry Dept. 377 (Ut, Ut); Collector undesignated s.n. (Le); Focke 566 (Ed, Ut); Herb. Canby s.n. [Surinam] (Pa); Hostmann 356 (Cb, Cp, F--686713, Gt, Gt, L, Le, P, P, V--112481, V, X), 556 (B, Bm, Cb, K, K, Ut, V--211636, V--285046, V), s.n. (Le); Hostmann & Kappler 190 [357] (S), 356 (B, E--119102, Mu--1376, P, S, Ut, V--112480, V, V, X), 556 (P); Kappler 356 (L, Mu--1178, P, X); Kegel 1242 (Gt); Kuyper 17 (N, Ut); Samuels 280, in part (A, B, G, K, Le); Splitgerber 70 (Le), s.n. [Nov. 1837] (Cb, Le, P, V); Tullocken 29 (Le, Le, Le, Le); Weigelt s.n. (D, D); Went 298 (Ut); Wullschlägel 410 (Br, Br), 3706 (V--161110). FRENCH GUIANA: W. E. Broadway 372 (G, N, W--1068665); Collector undesignated 358 (B); Gabriel s.n. [1802] (Cb, Cb, Cb); Herb. Barbier s.n. (P); Herb. Thibaud s.n. [Cayenne, 1815] (Dc). CANARY ISLANDS: Tenerife: C. Burchard 191 (S), s.n. [Nov. 1934] (S). BELGIAN CONGO: M. Laurent s.n. [1906] (Br, Br); Pynaert 327 (Br), s.n. [1906] (Br), s.n. (Br); Vermoesen 2145 (Br, Br). FRENCH INDIA: Contest-Laceur s.n. [Pondichéry, juill. 1864] (Lu). HAWAIIAN ISLANDS: Oahu: A. R. Cooke s.n. [Manoa Trail, Sept. 26, 1954] (Ok). CULTIVATED: Annam: Clemens & Clemens 3755 (Ca--340564, Gg--156575, Mi, N, Ut--99809), s.n. [August 29, 1927] (Ca--339962). Australia: J. L. Bailey s.n. [Bot. Gard. Adelaide] (A). Austria: Hebenstreit 791 (L); Herb. Hort. Schönbrunn s.n. [VI.87] (Cp), s.n. [1815] (V, V), s.n. [5. 1] (V); Host s.n. [herb. hort. Vindob.] (V). Azores: Carreiro 40 (E--40789); Ogilvie-Grant 40 (Ed). Belgian Congo: Corbisier 135 (Br, Br, Br); M. Laurent 1283 (Br); Pynaert 377 (Br), 577 (K); Vermoesen s.n. [1919] (Br, Br). Belgium: Lejeune s.n. [Hort. Bot. Lovan.] (Br); Pollard de Canidri s.n. (Br). Bermuda: Rankin s.n. [July 5, 1897] (Pr). California: R. Moran 2644 (N). Cameroons: Deistel 567 (B, G, Ut); Herb. Versuchsanstalt Kamerun 567 (Us); Preuss 1309 (B, B). Ceylon: H. Hallier C.237 (Le). Chile: Bridges s.n. [Coquimbo] (L). Cuba: Roig 306 (Es). Denmark: Herb. Hort.

Bot. Haun s.n. [17/11/1924] (Cp, Cp). Dominica: Hodge 872 [August, 1937] (N). East Indies: Collector undesignated s.n. (Dr). Egypt: Fishe s.n. (Le); G. Maire 1187 (La). England: Herb. Hort. Sherard s.n. (Bm); Herb. Hort. Stucker s.n. [Herb. A. L. Jussieu 5091] (N--photo, P, Z--photo); Moffatt 1772 (Ed). France: Collector undesignated s.n. [29 aout] (Dc), s.n. [Trianon] (Dc); Gouan s.n. [Montpellier] (K, N--photo, Z--photo); Herb. De Candolle 930 (Dc); Herb. Hort. Audibert s.n. (Dc); Herb. Hort. Bot. Paris s.n. (Cb, Cb); Herb. Hort. Malmaison s.n. (L); Herb. Hort. Monspeiliensis s.n. (L); Herb. Jard. Gouffé s.n. [Sept. 12, 1821] (K). French India: Contest-Lacour s.n. [1868] (Lu); Herb. Ind. Fr. s.n. [Pondichery] (L). Germany: Herb. Hort. Bot. Götting. s.n. [Nov. 1799] (E--119091, E--119092); Herb. Kummer s.n. (Mu--1379, Mu--1387); Herb. Link s.n. (B). Hongkong: W. Y. Chun 9168 (N). India: Anstead 32 [Coimbatore, S. India] (A); Bourne s.n. [Madras, 26 May 1900] (K); Gamble 10724 (K), 17050 (K); Herb. Bot. Gard. Saharanpur 6208 (K); Herb. Hort. Bot. Calcuttensis s.n. (Le, Mu--761); Herb. Pierre s.n. [Hort. Bot. Cal. mai 1864] (P); Klingen s.n. [Herb. Bot. Gard. Saharanpur 1305/84] (L), s.n. [Herb. Bot. Gard. Saharanpur 1306/139] (L); Lushington s.n. [cult. Hospet] (K); Meebold 13878 (B); Parker s.n. [Govt. Agr. Hort. Gardens, Lahore] (A). Italy: Herb. Giard. Bot. Jirezza Pisa s.n. [1814] (S); Herb. Hort. Florentia s.n. (Cb); Herb. Hort. Neapol. s.n. [Sept. 1832] (Le); Herb. Jan. s.n. [14-2-17] (V--225442). Java: Herb. Hort. Bot. Batavia s.n. [Nov. '79] (B); Herb. Mus. Hort. Bot. Bogor. XI.G.17 (Bz--25784, Bz, Bz, Bz, Bz, N), XI.G.19 (Bz--25786, Bz, Bz, Bz, Bz, N); E. Nyman s.n. [h. b. Buitenz.] (Us); Warburg 1541 (B). Mauritius: Herb. Dept. Agr. Riduit spec. A [21/8/36] (K). Missouri: Herb. Ames s.n. [St. Louis] (Oa). Netherlands: Herb. Hort. Amsterdam s.n. (Le); Herb. Hort. Gr. s.n. [1831] (Ut); Herb. Persoon s.n. (Le); Herb. Royen s.n. (Le, Le); Korthals s.n. (Le). New Caledonia: Le Comte s.n. [Cal. franc.] (B). New York: Hartley s.n. [N. Y. Bot. Gard. Cult. Pl. 13449] (Ur), s.n. [N. Y. Bot. Gard., 3/17/20] (Ur); H. N. Moldenke 4433 (N, N, N, Z), 8381 [N. Y. Bot. Gard. Cult. Pl. 47859; Pl. Ind. No. 43651] (N), 8382 (N), 8383 [N. Y. Bot. Gard. Cult. Pl. 55098] (N); N. Taylor s.n. [N. Y. Bot. Gard. Cult. Pl. 4494] (N). Singapore: Herb. Singapore Bot. Gard. s.n. [1 Feb. 1925] (Ba, N). Southern Rhodesia: Stent s.n. [Herb. Govt. S. Rhodesia 4449] (N, N). Tahiti: Setchell & Parks 390 (Ca--219859). Trinidad: W. E. Broadway 3836 [Trin. Bot. Gard. Herb. 3836] (B, Cp, Le, Mu--4308, R, R); Mell s.n. [Bot. Gard., Aug. 10, 1923] (N). LOCALITY OF COLLECTION UNDETERMINED: Barbier s.n. [1847] (P); Collector undesignated s.n. (Dc, Dc, P); Herb. Adanson s.n. (P); Herb. Burman s.n. [Burcardia] (Cb); Herb. A. L. Jussieu

5086 (P); Herb. Lamarck s.n. (P); Herb. Ledebour s.n. (L); Herb. Lugd.-Bat. 908266-612 (Le); Herb. Mus. Bot. Lund. s.n. (Lu); Herb. Mus. Nac. Hist. Nat. Chile 16057 (Sg); Herb. Schrader s.n. (L); Herb. Schreber s.n. (Mu--756); Herb. Schultes s.n. (Mu--1378); Herb. Univ. Edinb. s.n. (Ed); Née s.n. (Du--166411). MOUNTED ILLUSTRATIONS: Colored plate s.n. (N, N).

CITHAREXYLUM STANDLEYI Moldenke in Fedde, Repert. 37: 234. 1934.

Literature: Moldenke in Fedde, Repert. 37: 234. 1934; Moldenke, Brittonia 1: 364. 1934; Standl., Field Mus. Publ. Bot. 18: 1001--1002. 1938; Hill, Ind. Kew. Suppl. 9: 67. 1938; Moldenke, Geogr. Distrib. Avicenn. 17: 1939; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 22, 23, & 88. 1942; Moldenke, Alph. List Cit. 1: 320 & 322. 1946; Moldenke, Phytologia 2: 384. 1947; H. N. & A. L. Moldenke, Pl. Life 2: 84. 1948; Moldenke, Alph. List Cit. 2: 343 & 436 (1948) and 4: 1000, 1057, & 1082. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 39, 40, & 179. 1949; Moldenke, Résumé 46 & 447. 1959.

Tree; branchlets and twigs very slender, acutely tetragonal, very light-brown, pulverulent or glabrate, lenticellate; nodes conspicuously annulate; principal internodes 1.5--6 cm. long; leaves decussate-opposite; leaf-scars borne on short ascending sterigmata to 3 mm. long; petioles slender, 7--17 mm. long, deeply canaliculate above (when mature), glabrous; leaf-blades chartaceous, uniformly light-green and shiny on both surfaces, elliptic, 4.5--18 cm. long, 2.5--7.6 cm. wide, acute or short-acuminate at the apex, entire, acute at the base and somewhat prolonged into the petiole, bearing 1 or 2 pairs of black glands on the prolongation beneath, glabrous on both surfaces or minutely pulverulent beneath; midrib slender, prominulent beneath; secondaries slender, 6--8 pairs, arcuate-ascending, especially arcuate at their apex, more or less irregular, prominulent beneath and slightly so above; vein and veinlet reticulation very abundant, plane beneath, prominulent and conspicuous above; racemes terminal, greatly elongated, 14--48 cm. long, nutant, loosely many-flowered, simple, 1.5--2 cm. wide; peduncles and rachis slender, light-brown, often lenticellate, mostly sharply tetragonal, pulverulent or glabrate, the former 6--6.5 cm. long, usually with 2 or 3 nodes, each of which bears a pair of bractlets or buds; pedicels (in fruit) stoutish, 1--1.5 mm. long, glabrous; bracts (if any) and bractlets caducous; prophylla setaceous, minute; flowers not seen, except for calyxes from which the corolla has fallen, these indurated, tubular-campulate, light-brown and venose, 3.5--4 mm. long, 2.5--3 mm. wide, glabrous, the rim truncate and subentire; fruit not known.

The type of this species was collected by Adolfe Tonduz (no. 8735) in the forests of Sipurio, Talamanca, at an altitude of 100--180 meters, Cartago, Costa Rica, in April, 1894, and is deposited in the Herbarium Boissier at Geneva. It is named in honor of my good friend and colleague, Paul Carpenter Standley, who has done such outstanding work on the flora of Central America. The species is sometimes cited from Bocas del Toro, Panama, on the basis of Dr.



John H. Barnhart's assertion that Talamanca lies in that country as well as in Costa Rica and that the Pittier and Tonduz localities are in the southern portion, therefore in Panama (cfr. Brittonia 1: 364. 1934). Dr. Pittier, however, assured me personally that he and Tonduz did all their collecting in the northern or Costa Rican portion of the territory.

The species ascends to 1400 meters altitude and has been collected in anthesis in July. It has been confused by herbarium workers with C. cooperi Standl., C. quadrangulare Jacq., and C. reticulatum H.B.K. In all, 23 herbarium specimens, including the type, and 5 mounted photographs have been examined.

Citations: COSTA RICA: Cartago: Tonduz 8735 (B--photo of type, Bm--isotype, Br--isotype, Br--isotype, Cp--isotype, Cp--isotype, F--576659--isotype, F--600294--isotype, K--photo of type, Le--isotype, Le--isotype, Mu--3786--isotype, N--isotype, N--isotype, N--isotype, N--photo of type, P--isotype, S--isotype, S--isotype, S--photo of type, W--1323224--isotype, X--type, X--isotype, X--isotype, X--isotype, Z--photo of type). San José: M. Valerio 1648 (F--905219).

CITHAREXYLUM STANDLEYI var. MEXICANUM Moldenke, Phytologia 4: 43. 1952.

Literature: Moldenke, Phytologia 4: 43 & 68. 1952; Moldenke, Résumé 35 & 447. 1959.

This variety differs from the typical form of the species in having its fruiting-racemes only 3.5--8 cm. long and its leaf-blades minutely puberulous throughout on the lower surface and much more densely so on the larger venation.

The type of the variety was collected by B. L. Turner (no. 2077) in gravelly-clay soil on a dry streambank, one mile east of La Placita, 45 air miles south of Colima, Michoacán, Mexico, on July 4, 1950, and is deposited in the herbarium of the University of Michigan. Thus far it is known only from the type collection, and only 2 herbarium specimens have been examined.

Citations: MEXICO: Michoacán: B. L. Turner 2077 (Mi--type, N--isotype).

CITHAREXYLUM STENOPHYLLUM Urb. & Ekm. ex Urb., Arkiv Bot. 22a, 17: 106--107. 1929.

Literature: Urb., Arkiv Bot. 22a, 17: 106--107. 1929; Hill, Ind. Kew. Suppl. 8: 53. 1933; Moldenke, Geogr. Distrib. Avicenn. 7. 1939; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 26 & 88. 1942; Moldenke, Alph. List Cit. 1: 189 (1946) and 4: 1062 & 1066. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 47 & 179. 1949; Moldenke, Résumé 56 & 447. 1959.

Shrub; branches and branchlets very slender, grayish, acutely tetragonal, glabrous; twigs very slender, acutely and sharply tetragonal, stramineous, glabrous; nodes not annulate; principal internodes 0.5--5 cm. long, usually much abbreviated on twigs; leaf-scars borne on corky ascending sterigmata 1--3 mm. long; leaves decussate-opposite, numerous; petioles slender, 1--5 mm.

long, glabrous, usually more or less margined; leaf-blades firmly chartaceous or subcoriaceous when mature, very thin-membranous when immature, uniformly gray-green and shiny on both surfaces when mature, nigrescent in drying when immature, linear, often subfalcate, 1.8—6.5 cm. long, 3—6 mm. wide, acute to more or less tapering at the apex, entire, attenuate into the petiole at the base, not glanduliferous, completely glabrous on both surfaces; midrib slender, plane or slightly prominent above, prominent beneath; secondaries 3—5 pairs, ascending, slightly prominent above, prominent beneath; vein and veinlet reticulation slightly prominent above, prominent beneath; racemes axillary and terminal, 1—3 cm. long, simple, rather few-flowered; peduncles and rachis very slender, glabrous; bracts and bractlets foliaceous, membranous; prophylla linear, about 1 mm. long; mature flowers not seen; immature calyx campanulate-turbinate, its rim truncate, minutely denticulate and ciliate; corolla said to be white; fertile anthers 4; fruiting-calyx and fruit not seen.

The type of this distinctive species was collected by Erik Leonard Ekman (no. H.10576) on eruptive soil at an altitude of 1300 meters on the slope of Morne Sentier, Tiburon, in the western group of the Massif de la Hotte, Haiti, on August 26, 1928, and is deposited in the herbarium of the Naturhistoriska Riksmuseet at Stockholm. The collector describes it as rare. The mature leaves have the consistency of those of C. fruticosum var. smallii, to which it is obviously related. In all, 8 herbarium specimens, including the type, and 4 mounted photographs have been examined.

Citations: HISPANIOLA: Haiti: Ekman H.10576 (B—isotype, B—photo of type, K—photo of type, N—isotype, N—isotype, N—isotype, N—photo of type, S—type, S—isotype, W—1414062—isotype, W—1479700—isotype, Z—photo of type).

CITHAREXYLUM STEYERMARKII Moldenke, *Phytologia* 2: 14—15. 1941.

Literature: Moldenke, *Phytologia* 2: 14—15. 1941; Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 1], 19 & 88. 1942; H. N. & A. L. Moldenke, *Pl. Life* 2: 84. 1948; Moldenke, *Alph. List Cit.* 2: 351 (1948) and 3: 973. 1949; Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 2], 35 & 179. 1949; *Salisb., Ind. Kew. Suppl.* 11: 55. 1953; Moldenke, *Résumé* 41 & 447. 1959.

Shrub, to 3.1 m. tall; branches tetragonal, brownish, glabrous, medium-slender, shiny; youngest twigs minutely puberulent; nodes annulate; principal internodes 1.5—10.5 cm. long; leaves decussate-opposite; petioles stout, 5—18 mm. long, glabrous; leaf-scars large, corky, prominent, divergent, 3—4 mm. long; leaf-blades chartaceous when young, subcoriaceous when mature ["firmly membranaceous" according to the collector], elliptic, dark-green above, paler beneath, 4.5—18 cm. long, 1.8—7.8 cm. wide, acuminate at the apex, entire, often slightly undulate along the margins, acute or acuminate at the base, glabrous or very minutely and obscurely pulverulent-punctate on both surfaces, very minutely and obscurely short-puberulent along the midrib above; midrib slender, flat or subimpressed above.